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Localization of Open Educational Resources (OER) in Nepal:

Strategies of Himalayan Knowledge-Workers

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A dissertation submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

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ABSTRACT

Localization of Open Educational Resources (OER) in Nepal:

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This dissertation examines localization of Open Educational Resources (OER) in Himalayan community technology centers of Nepal. Specifically, I examine strategies and practices that local knowledge-workers utilize in order to localize educational content for the disparate needs, interests, and ability-levels of learners in rural villages. This study draws on insights from non-formal education (NFE) stakeholders in Nepal, including government, UN, international and national NGOs, local knowledge-workers, and learners from different villages. I specifically focus on a sample of seven technology centers to better understand how localization is defined, designed, and executed at a ground level. I illuminate obstacles knowledge-workers face while localizing content and strategies to overcome such barriers. I conclude by offering key principles to support theory development related to OER localization. This study is anchored in hermeneutic inquiry and is augmented by interpretive phenomenological analysis and quasi-ethnographic research methods. This qualitative study employed interviews, focus group discussions, observations, and artifact reviews to identify patterns of localization practices and themes related to localization of critical content in Himalayan community technology centers of Nepal. This dissertation provides valuable evidence not only *why* localization matters (a statement that has been hypothesized for the past decade); but also provides proof of *how* localization is executed and concrete ways that localization *could* be improved in order for OER to reap efficacious learning gains for more rural people in developing countries and in other rural communities across the globe. The full text of this dissertation may be downloaded for free from http://etd.byu.edu/

ACKNOWLEDGEMENTS

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ABBREVIATIONS

AP	Access Point
BYU	Brigham Young University
CDN	Community Development Network
CoP	Community of Practice
DFID	Department for International Development (United Kingdom)
DST	Digital Story-Telling
EFA	Education for All (UNESCO Initiative)
ENRD	E-Network Research Development (Organization Name)
FGD	Focus Group Discussion
GoN	Government of Nepal
HLCIT	High Level Commission for Information Technology
ICT	Information and Communication Technology
INGO	International Non-Governmental Organization
KW	Knowledge Worker (facilitator, teacher, instructor)
LLI	Laubach Literacy International
LRC	Literacy Resource Center
MDG	Millennium Development Goal
MoIC	Ministry of Information and Communication
MoST	Ministry of Science and Technology
MPP	Madan Puraskar Pustakalaya (MPP)
NGO	Non-Governmental Organization
NFN	NGO Federation of Nepal
NITC	National Information Technology Center
NpIX	Nepal Internet Exchange
OC	Open Content
OC4D	Open Content for Development (Program Name)
OER	Open Educational Resource
OKN	Open Knowledge Network
OLPC	One Laptop per Child (foundation name)
PLW	ProLiteracy Worldwide
PPP	Public-Private-Partnership
READ	Rural Education and Development (organization name)
RITC	Rural Information Technology Center
SLC	School Leaving Certificate
TMUC	Tulasi Meher UNESCO Club
TVJ	Tele-Vision Journalist Association of Nepal
UNDP	United Nations Development Program
UNESCO	United Nations Educational Scientific Cultural Organization
USAID	United States Agency for International Development
VDC	Village Development Committee
VSAT	Very Small Aperture Terminal
WVI	World Vision International
YMRC	Youth-Managed Resource Center

CHAPTER 1: INTRODUCTION

Improving opportunities for education in the developing world is directly linked to eliminating various forms of poverty (UNESCO, 2010). Access to information is integral in empowering individuals to be agents of change in their own lives and to make positive changes in their families and communities. Education activates agency by facilitating the construction, interpretation, and dissemination of knowledge. Furthermore, education impacts the ways individuals understand the world and their own place within it (Curtis, 2010; Shields, 2008).

Despite the universal importance of education, in 2009 the World Bank reported that over a billion people are currently unable to access educational opportunity (World Bank, 2009). Rural educational challenges are exacerbated by significant barriers to its access (e.g., geographic, political, and economic obstacles), which impede dissemination of critical content and lifesaving information (HLCIT, 2009). Improving mechanisms to access localized content tailored for rural needs could increase knowledge for millions and drastically improve the well-being of individuals living in areas where poverty is rife (WHO, 2009).

The Himalayan kingdom of Nepal has the most rugged terrain in the world **(**HLCIT**,** 2010; CIA Factbook, 2010). Hampered access to education is exacerbated against this backdrop of geographic barriers. Additionally, limited roads, weak infrastructure, political instability, ancient cultural and caste systems, and a male-privileged social structure also contribute to the predicament of educational access for the majority of Nepalese people (UNESCO, 2010a; UNESCO, 2010b).

Although numerous educational initiatives have been started in Nepal during the past fifty years, little evidence reveals sustainable impact of donor funding and educational efforts (White,

2009; Shields, 2008; UNESCO, 2008). Collective experience shows that grassroots community-learning programs and those they serve confront numerous barriers of continued access to learning tools and information once programs finish or donors leave (World Bank, 2010; Pun, 2009).

For these reasons, educational programmers now recognize the imperative for Nepalese communities to focus on building capacity of local leaders with locally based resources if they wish to sustain local efforts focused on village development (Bhattarai, 2010; White, 2009). Although policies increasingly advocate for decentralized control, there are many questions about how to best achieve this, particularly with regard to decentralized educational programming (GoN, 2010).

Sustaining neo-literate momentum for learning is always a struggle since most literacy learners around the world do not enjoy the benefit of the scaffolding provided by a literate society. Libraries are often non-existent; few literate role models exist in the community; schools are resource-strapped and usually far away. Indeed, most learners are unfamiliar with the "culture of literacy" that is vital for lifelong learning (Nabi, 2009; Rogers, 2008; Street, 2000).

Non-formal education (NFE) stakeholders across the world seek innovative means to assist *knowledge-workers*, as they are termed in Nepalese—those who bridge people with knowledge (e.g., literacy facilitators, trainers, teachers, Information Communication Technology (ICT) managers, community health volunteers). In turn, knowledge-workers aid villagers in order to access content on demand through local learning centers (access points) in order to cultivate a literate environment and sustain literacy for generations.

Frank Laubach, a leading literacy advocate in America and founder of Laubach Literacy International, declared in 1912 that the ideal scenario would be for every community center to be its own local print shop (Laubach, 1937). During the heyday of colonial-based education in India, he

taught the foreign (sometimes considered revolutionary) idea that "locals know best what locals need," and he fiercely advocated for mother-tongue literacy (Laubach, 1937, p. 212).

However, until now, the dominant trend of Nepalese educational organizations and government ministries has been divergent to this concept that locals know best how to solve their own problems. Instead, educational leaders in core areas have usually prescribed what is needed in periphery settings. Centralized controls and hegemonic authoritarian styles have often been the status quo of the education sector. Decisions about implementation of educational programs have rarely been decentralized and only in the recent decade have policies shifted to reflect such a need (GoN, 2010). The World Bank (2010), United Nations (UNDP, 2010), and USAID (2010) now agree that local design and execution is essential for improved educational gains in developing countries. However, few studies have been conducted to reveal the practical examples that actually achieve this aim of local control and local strategies that create localized educational resources.

NFE stakeholders around the globe are now eager for best practices that support evolving theories regarding learning and teaching using 21st century technologies in developing country contexts. Rural practitioners now push for local access to content through local access points (Bhattarai, 2010; Pun, 2009). OER advocates hypothesize that such access will enable villagers with life-long learning opportunities perpetuated by individuals and communities in contrast to the typical dependence of educational initiatives upon foreign NGOs and external funding.

New forms of ICT and theories of learning associated with them present one potential solution for bridging the barriers to educational access in Nepal. Precipitated by the expansion of manufacturing, falling costs of technology, and the rapid growth of global communication networks, new ICTs (e.g., mobile phones and computers) increasingly find a rapidly growing

user base in low-income countries like Nepal (IDRC, 2009; Sheilds, 2008; *The Economist*, 2010). Shared-access mechanisms like community centers, telecenters, and cyber cafes now extend even broader access to ICT, making global information and knowledge networks available to many of the world's poorest communities (Shields, 2008).

During the past decade as educational technologies have received increased emphasis in Himalayan villages (Bhattarai, 2009), over 200 community-learning centers across Nepal have incorporated ICTs in an effort to overcome geographical, political, and social barriers to educational access (HLCIT, 2009).

In light of this, remote learners now visit these access points seeking lifesaving information, also known as *critical content* (Curtis, 1990), related to health, agriculture and microenterprise. Non-formal education stakeholders (e.g., government leaders, UN ministries, local representatives) agree that many rural community centers are now technically positioned to connect villagers with critical content (Bhattarai, 2010; UNESCO, 2010; Pun, 2009; Tschering, 2008).

However, access to information alone is not enough. Access to the right kind of content is key. Furthermore, at the core of this challenge is the *localization* of content—meaning the tailoring of content by locals for locals using appropriate, sustainable technologies (Wiley, 2010; UNESCO, 2009; Pun, 2008). *Open Knowledge* is an increasingly popular term (OKN, 2010) that refers to a set of methodologies and principles that are related to creating and sharing educational materials. In this context, the production and the distribution of knowledge works occur in an open manner. The general term *knowledge* is defined to include data such as historical, geographic, and scientific information, and content such as books, films, and music, or

general information produced by governmental or other administrative authorities.

Open Educational Resources (OER) offer expanded access to knowledge through digital content repositories housed by online and offline technologies. This knowledge is called open content because it can be improved through "the 4Rs" – meaning that knowledge-workers can "reuse, redistribute, revise, and remix" content according to learner needs and interests (Wiley, 2010; Hilton, Wiley, D., Stein, & Johnson, 2010). Today, 21st century ICTs are enhanced by 4R activities for increased distance learning worldwide (Bhattarai, 2009).

OER advocates contend that rural communities now hold potential for unprecedented access to knowledge at minimal cost (Wiley, 2010; Mackintosh, 2010; Hewlett, 2007). Furthermore, modern low-tech computers and enhanced mobile devices now enable community centers to leapfrog infrastructural setbacks in developing countries (for example, WiFi leapfrogs the need for miles of costly cable) (DFID, 2010; ID21, 2003). Today the corpus of open content proliferates rapidly as more educators grasp the concept, join the global OER community, and share knowledge as a public good (Hewlett, 2007).

However, while open educational resources hold the potential to bless lives around the world, many of the initial users have realized that, unless these resources are tailored for the needs of specific learners, the power of OER lies dormant and unrealized (Heeks, 2009; Wiley, 2010). Little is currently known about localization practices of OER, and only a paucity of resources exists to build capacity of non-formal educators to customize and disseminate localized open content (Wiley, 2010; UNESCO, 2009; Pun, 2008). Furthermore there is a need for greater understanding regarding appropriate learning and teaching theories that are backed by sufficient practical evidence from the field which may bolster cross-cultural use of OER.

Purpose of Study

The purpose of this study is to better understand localization strategies used by Himalayan knowledge-workers in order to make content relevant to those they teach. The overarching academic theory that I explore is "localization unlocks the power of OER." Although this concept has been stressed at conferences and symposia regarding the growing OER movement in developing countries (Wiley, 2007; Mackintosh, 2010; OERF, 2011), concrete evidence to these numerous claims is still lacking. There are very few studies that explore the practical involvement of knowledge-workers and everyday activities related to OER localization. My intent is to build an evidentiary basis for these numerous claims by providing case studies, best practices, and strategies of localization in an effort for practitioners to improve the utility of OER in developing country settings, particularly in Nepal.

This study also seeks to lay the groundwork of a nascent body of knowledge regarding the general localization of OER in the field of non-formal education (NFE), since much of the existing corpus of OER literature relates to use in formal education settings, particularly in the higher education arena. This study is useful and relevant for understanding OER utility in developing countries, particularly in Himalayan community centers of Nepal, since existing literature is dominated by a focus on OER use in higher-income developed country settings. Finally, this dissertation aims to identify core principles related to teaching and learning with OER which may undergird theory development regarding everyday use of localized OER by practitioners in rural educational development settings.

This study does not claim to be exhaustive regarding OER and localization in Nepal or in all developing countries. Indeed, this study is only a snapshot of the patterns and trends as seen

through the eyes of the researcher and those who participated in this research with an emphasis on the seven specific Himalayan communities wherein the research was conducted. More work must still be done in this area.

The primary audience for this research is the academic community. However, it is hoped that this research will help raise awareness within and beyond the academic community about OER and localization realities and possibilities. The evidence and resulting theory produced by this study is aimed at informing policy, fundraising, and management agendas for OER and NFE and to ultimately improve rural education programming in developing countries through open educational resources.

Additionally it is hoped that this research may, in some way, benefit NFE stakeholders in Nepal (government leaders, international and national NGO-representatives, community-based programmers, knowledge-workers, and learners). I anticipate that sharing these best practices, challenges, and strategies for OER will enhance and expand localization in Himalayan villages. I also hope that this study may amplify support from the global community to fortify knowledge-workers worldwide with tools and strategies that improve their ability to serve others who seek knowledge. The end goal of this research is to improve teaching and learning practices by improving understanding of content localization possibilities and problems. While this study focuses on knowledge-workers in Nepal, the core tenets and principles of this research may illuminate realities of non-formal learning in other communities worldwide and may lend support to improving access to relevant, lifesaving knowledge in effective ways.

Importance of Study

As the review of the literature will demonstrate, open educational resources (OER) have laid the groundwork for amplified access to knowledge in rural communities in unprecedented ways (Hewlett, 2007; UNESCO, 2010; Wiley, 2010). However, what the literature does not reveal is the way that learning tools developed for a specific group of people in one part of the world can be transformed into a learning resource that is relevant and useful to other learners with different needs across the globe (Bhattarai, 2010; HLCIT, 2009; OKN, 2009).

Some question whether OER actually enables access to *quality* content. Others wonder if OER can really be tailored for non-academic communities in developing countries. There is a paucity of research and very limited literature that addresses localization of OER and the strategies that practitioners utilize in order to tailor knowledge for the needs of those they teach.

Beyond this, there is even less documentation about the localization strategies and practices currently used in the specific context of Nepal (Bhattarai, 2010; HLCIT, 2010; Pun, 2009). Yet, if localized OER hold the potential to improve rural information access in a nation where over 70% of the nation lives in remote villages (CIA Factbook, 2010), then it is imperative that we better understand OER localization and its implications for improving distance education in Nepal.

This study provides evidence that can be used to inform educational policy and programming in Nepal with regard to OER as well as to provide a springboard for further research in communities with similar contexts. In addition, this study contributes to a growing body of research on educational change and possible reforms in rural Nepal. Throughout Nepal's history, educational change has occurred almost exclusively through the transfer of ideas from the semi-urban Kathmandu capital out to the very rural mountain villages,

a practice that has led to a sense of resistance and disaffection in many parts of the country (Bhattarai, 2010; Shields, 2008). In contrast to the prevailing research available on education in Nepal, this study concentrates on a more rural setting with the intent to share ideas from the grassroots level back to the urban capital and beyond. To the extent that OER and ICT in education represent innovation and change in a modern context, this study illuminates some insights on how this process of change unfolds in a contemporary context.

Research Questions

This research focused on three main areas of investigation: the current strategies used by knowledge-workers to localize content, the extent that they feel they localize content, and the obstacles they face doing such activities. The specific research questions for this study are given below.

Question 1**:** How do Himalayan knowledge-workers *localize* content in community technology centers of Nepal?

Related sub-questions: How do they identify interests and needs of learners? How do they know if they've responded to learner needs? How is technology used in this process of localization? Is there a time when technology is not utilized in order to localize content?

Question 2**:** To what extent do knowledge-workers feel that they *localize* content according to their own definition of localizing?

Related sub-questions: What do they understand by the term *localization*? In what ways do they feel that they are involved in localization of content?

Question 3: What strategies could improve *localization* of content in Himalayan community centers of Nepal?

Related sub-questions: What challenges do knowledge-workers face to find the content that villagers are looking for? What challenges do young leaders face when localizing for the needs of older learners? What principles must be observed in order to effectively localize content? What challenges are posed by technology when localizing content? How do they know if content works for learners? How does localized content reach the learners? Do administrators help or hurt in the process of localization? What is recommended to improve and increase localization in order to benefit more learners?

Terminology of Study

Language and representation present complications since they are inherently tethered to a *particular* worldview and set of biases (Shields, 2008). Bourdieu acknowledges this: "language is not only an instrument of communication or even of knowledge, but also an instrument of power" (Bourdieu, 1977, p. 20).

Terminology that is used to place countries hierarchically is especially difficult. The dichotomy of *developed* and *developing* countries (with its implication of *undeveloped*) no longer seems tenable in a world where the richest countries regularly disregard human rights but are called *first-world* and where cutting-edge technologies are actually developed in *third world* countries (Shields, 2008). Hawkins (1988) refers to this as an "anachronistic political paradigm" wherein the first (capitalist) and second (communist) world vied for control over the rest of the (third) world. Escobar (1995) contends that the concept of the *third world* is actually a Western construction and a hegemonic discourse; it is the means by powerful nations employ to even further exert influence. With this in mind, I have chosen not to use the numerical terms of first, second and third to refer to countries mentioned in this study. However, I have chosen to use the

terms *developed* and *developing* since this is what is most commonly used in Nepal to distinguish such differences between nations. *Developed* does not mean *better*, although it usually entails a greater degree of economic and political power.

The term *education* carries a similar ideological burden, as it relates to socio-cultural ideas of what constitutes valid (usually income-generating) knowledge and acceptable forms of socialization. In most cases, I use the term in its broadest sense to include areas such as non-formal education programs, adult education, vocational education, and both public and private schooling as it exists in a rural setting of Nepal.

The term *technology* is also used broadly, encompassing any instance of the "application of knowledge to practical purposes" (The American Heritage Science Dictionary, 2002). *Information technology* and *information and communications technology* (ICT) are used interchangeably in this study to describe any type of technology that is used for the purpose of storing, transferring, or retrieving ideas, knowledge, or data. While these terms are often interpreted to reference relatively new forms of technology (specifically computers and mobile phones), my definition also encompasses older technologies, including: radio, television, and even print media.

Since information and knowledge are constructed within specific socio-cultural contexts, the use of technologies that convey information is inevitably non-neutral and is laden with certain cultural biases. When referring to *information technology* or *information access*, it should be remembered that the information in question is situated within a particular world-view with inherent biases as well.

Additional terms in this dissertation will be defined as follows:

Access is defined according to the United Nation's *Right to Education* principles: available, accessible, acceptable and adaptable (Tomasevski, 2007).

Appropriate technologies are defined as those suitable for developing countries where infrastructures are weak (e.g., sporadic electric lines, constrained bandwidth). Such technologies include solar-powered lighting, battery-powered computers, 4-in-one machines with printer-fax-copier-scanner together, Internet, and mobile phones (ID21, 2004; UNDP, 2009).

Center of Knowledge (core) is a point of reference where information can be retrieved in rich, diverse, efficient and relevant formats and where access to that knowledge is affordable, available, accessible, and adaptable. Most centers of knowledge exist in urban centers or urban cores, where professionalism, wealth, industry, and power are dense. These centers, or "cores," exist in contrast to the peripheries of knowledge, where people are typically rural and poor (Chambers, 1983).

Community Learning Centers are defined as non-formal gathering places where instruction takes place (in contrast to public schools or universities). In Nepal, such centers may be multipurpose centers such as local government offices (Village Development Committee, "VDC", offices) or health clinics or *falcha* points (central sitting points for elders and dignitaries to exchange information). Increasingly, such community centers have been infused with *appropriate technologies* geared for use in developing countries.

Critical Content is defined as pertinent information that contributes to personal knowledge that one can apply in daily problem solving (Curtis, 1990; Freire, 1972; UNESCO, 2009).

Information Communication Technology (ICT) includes various resources and technologies that support communication, including: computers, Internet, radio, mobile phones, mobile devices (e.g., PDAs), printers, fax machines, scanners, etc. (UNESCO, 2010).

Insider is defined as someone who *belongs* in a rural community because they are both rural, poor, and hampered in accessing important resources due to distance (e.g., facing geographic, and/or infrastructural barriers) (Chambers, 1983).

Knowledge-worker is defined in this study as community facilitators who teach in non-formal education settings. Such teachers are sometimes called change-agents (So, 1990) or practitioners and share similar roles although they may work under different titles, including: literacy facilitator, community health volunteer, agricultural extension agent, microloan officer, social mobilizer, or social worker (Ivins, 2010). Some activities may include: identifying learner needs; accessing content relevant to learners' needs; engaging in processes of adapting, modifying and localizing content to be relevant to user purposes; and conducting teaching activities and dissemination practices in order to cultivate knowledge and skills.

Learners are defined as those who benefit from non-formal instruction through activities of knowledge-workers (Curtis, 1990; Freire, 1972) regardless of the disciplinary focus of content (e.g., health, agriculture, basic literacy, conflict resolution etc.).

Localization is defined in context of the OER movement: the process of adapting, modifying and tailoring content for a specific user's need and context with particular regard to local culture, local infrastructure, local issues, and local resources (Mackintosh, 2010; Ivins, 2010).

Micro-Learning Centers are community-based non-formal education hubs. In Nepal, there are several centers that fall into this category: Community Centers (CC), Community Learning Centers (CLC); Community Technology Centers (CTC); Community Multimedia Centers (CMC); Rural Information Technology Centers (RITC); Cyber-Cafés (CC); Tele-Centers (TC); Access Points (AP); Youth-Managed Resource Centers (YMRC) (HLCIT, 2010).

Open is defined in context of the OER movement and refers to more flexible copyright permissions than standard copyright laws. In contrast to proprietary privileges of standard copyright laws, an *open* copyright allows users to engage in modifying materials (OpenContent, 2011).

Open content is content licensed under an open copyright at no cost to the user. Openness exists on a continuum. Content is more open to the extent its license allows users to: reuse, revise, remix, and redistribute – also called the "4Rs" (Hilton, Wiley, Stein, & Johnson, 2010). Content is less open to the extent its license restricts 4R activities. The 4Rs are defined in greater detail according to their definitions on www.opencontent.org:

1. Reuse - the right to reuse the content in its unaltered / verbatim form (e.g., make a backup copy of the content);

2. Revise - the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language);

3. Remix - the right to combine the original or revised content with other content to create something new (e.g., incorporate the content into a mashup);

4. Redistribute - the right to share copies of the original content, including revisions, or remixes with others (e.g., give a copy of the content to a friend).

Open Content for Development (OC4D) is defined as an OER content portal designed specifically for non-formal education knowledge-workers who teach learners in developing countries and focus on pertinent issues related to their lives (e.g., health, agriculture, livelihoods, income generation, microenterprise, and conflict resolution) (Ivins, 2010; CDN, 2010).

Outsider is defined as someone concerned with rural development that is neither rural nor poor (Chambers, 1983).

Periphery of Knowledge is a point of reference where information is severely lacking, dissemination of knowledge is hampered, ability and/or knowledge is limited with regard to navigating the system that would increase one's own opportunity and/or rights. This periphery of knowledge is in contrast to centers of knowledge (or, *cores*) where access to knowledge is efficient and relevant and where access to that knowledge is affordable, available, accessible, and adaptable. (Chambers, 1983)

CHAPTER 2: LITERATURE REVIEW

Availability of information and access to it increasingly expands educational opportunity in developing countries through tailored technologies and innovative designs. However, information alone does not secure transmission of knowledge – especially to remote learners in low-tech, infrastructure-poor communities.

As Freire aptly noted, "in order for the oppressed to be able to wage the struggle for their liberation, they must perceive the reality of oppression not as a closed world from which there is no exit, but as a limiting situation which they can transform" (Freire, 1972). Thus, *information* can provide individuals with tools for change, but *education* empowers them with ability to actually use those tools to create a better life.

For this reason, rural educators in the 21st century require innovative mechanisms not only for accessing information, but also for localizing information in order that it supports true education that will empower learners. Furthermore, building the capacity of these knowledge-workers is vital in order to extend meaningful content to the hardest-to-reach learners.

Education in Developing Countries

Nearly one-half of the world's population lives in acute poverty, living on less than two USD per day (Ballard, 2011; UNDP, 2010). Illiteracy is associated with extreme poverty and other dilemmas that impede well-being. Despite this, one-fifth of the world's population has not realized the right of literacy (UNESCO, 2010). Access to educational opportunity is especially hampered in rural areas of developing countries (ICIMOD, 2011; UNDP, 2010).

Women worldwide are less literate than men with the lowest literacy rates in developing countries, particularly in Africa and Asia (DFID, 2009). Numerous studies corroborate the belief

that education is a central factor in eliminating various forms of poverty (economic, social, physical, spiritual) in the developing world (UNDP, 2010; World Bank, 2010; OECD, 2009; White, 2009).   Furthermore, educating women is the best investment to ensure that both male and female children will also receive education (ProLiteracy, 2010; Clinton, 2000; Bown, 2000).

The right to education is one of the most important rights proclaimed by the Universal Declaration of Human Rights because education is defined not only as a right in itself but also as a vital means of promoting peace and respect to achieve all other human rights and fundamental freedoms (UNESCO, 1948). Beyond this, education allows human beings to pursue their own dreams in their own way, thus fulfilling the potential that lies within all human beings.

However, effectively accessing and disseminating education in developing countries requires the continuous removal of obstacles in the way of the right to education. One possibility for achieving this is through a holistic approach with concerted focus on sustainable and context-sensitive programming conducted by locals for locals with particular regard to localized content creation, collection and dissemination (Tomasevski, 2005).

An important question to ask regarding education is this: "Whose knowledge?" Hatch (1976) observed, "The development profession suffers from an entrenched superiority complex with respect to the [rural person]. We believe our modern technology is infinitely superior to his. We conduct our research and assistance efforts as if we knew everything and our clients nothing" (Hatch, 1976, pp. 6-7).

Very rarely have educational resources been generated by rural people for rural people, although they know best the realities and conditions of their own localities (HLCIT, 2010; Pun, 2009). Indeed not just in developing countries but across the globe, one can see "centralized

urban and professional power, knowledge, and values have flowed out [from the center] and often [fail] to recognize knowledge of rural people themselves" (Chambers, 1983, p. 83).

"Rural people's knowledge" is an inclusive term to explain what information exists in remote areas. The 'rural' includes those farmers, from both small and large farms, who compose the majority of people in remote villages. The 'people's' part of the term refers to the reality that much of the knowledge is located *in* people and only occasionally written. 'Knowledge' refers to the breadth of knowledge, including beliefs, perceptions, the currency, and mechanics whereby it is learned, enhanced, retained and shared (Curtis, 1990; Pun, 2008).

Few people know what rural knowledge is. Ethnographers and anthropologists have worked to establish *people's science—a* term to describe the knowledge system of a group of rural people. But, historically, this knowledge has been *about* rural people, not knowledge *for* rural people – and that is a substantial difference. It is knowledge primarily for beneficiaries in places of power, instead of knowledge shared in the places of greatest need (Chambers, 1983).

Chambers (1983) expounds on this: "Outsiders are hindered from accessing and benefiting from rural people's knowledge because of many barriers. Besides power, professionalism, prestige, lack of contact, language issues and sheer prejudice, another factor is the gap between practitioner and academic cultures" (p. 83). He continues, "Local knowledge is tempting for its simplicity. Local knowledge of rural peripheries can be contrasted with centralized knowledge of urban cores. But a weakness is the commonsense interpretation that it refers to knowledge of a local environment, rather than to the knowledge of people existing as a system of concepts, beliefs, and ways of learning" (Chambers, 1983, p. 83).

To bridge the gap between outsiders and insiders requires paradigm shifts to offset the unequal balance between outsiders' knowledge and rural people's knowledge. Chambers (1983) continues,

> Outsiders' knowledge (modern, scientific [knowledge]) is accessible to those who can read it in books, on the Internet, and other information retrieval systems. The predominance of information available across the globe is that academic information which most often benefits those who generate it. It is easily communicated, and is taught all over the world…it both supports the state and the state apparatus and is supported and propagated by it. (Chambers, 1983, p. 85)

In contrast, the knowledge of any group of rural people is accessible to outsiders only by learning from rural people themselves, or sometimes through anthropological literature coded in jargon. But, rural people's knowledge exists in innumerable forms among many groups of people in different environments. Outsiders are intertwined with knowledge from the core areas and are privy to accessing written forms of immense knowledge that overwhelms the small amount of local knowledge that is written by rural people. Regarding this kind of rural knowledge, Chambers (1983) says: "It is the powerful who are ignorant. It is they who have to begin as learners, and rural people who can instruct them" (p. 84).

Rural people's knowledge has multifarious dimensions, including: linguistics, medicine, craft skills, botany, zoology, ecology, climate, agriculture, and animal husbandry. But, power shifts are required in order to include rural people in the circles where decisions are made about knowledge and opportunities are created to involve them in the global society. Only if these existing paradigms are challenged may rural people engage in processes of accessing, localizing and sharing knowledge in a two-way, give-take relationship with the outside world.

Information Communication Technology (ICT)

Knowledge is power. Stakeholders of education in developing countries increasingly focus on information communication technology (ICT) with the belief that these new technologies may dramatically empower the poor through distance education and improved means of accessing information (DFID, 2010; UNESCO, 2010; ID21, 2003). Ideally, this improved access to knowledge would also improve the power of rural people's voices. Mechanisms for incorporating rural people's input are still in the early stages of development; limited research exists in this arena.

However, as the economic gap between rich and poor countries continues to widen, another gap has emerged between the elite with access to information technology and the poor without it. This has important implications for distribution of knowledge and power in the 21st century. Dorsey (2010, p. 13) aptly said: "At no time in history has the role of information and communication been more important to global economic, social, and political development."

ICT and educational development. Technology is both the sword and the shield in rural developing countries. While it may be the means whereby lifesaving resources may reach disenfranchised nations, it may also be the means by which more industrialized nations may rob resources from those who have less information or knowledge about markets, networks, global intellectual property laws, and power (Chambers, 1983; ID21, 2003; Wiley, 2011). The relationship between knowledge and power has wider and subtler ramifications: "Those who are powerful and dominant have the greatest accumulations of wealth, a centralized and interconnected system of communication, an ability to determine what new knowledge shall be created, and control over flows of information from the centre to the rural periphery" (Chambers,

1983, p. 76). Indeed, knowledge is power. But, it appears that power is now spreading outward through the proliferation of ICTs.

The World Bank and other international development groups propose that ICTs are integral in achieving educational goals and poverty reduction strategies in the 21st century (World Bank, 2009). With globalization, the information revolution, and increasing demands for a highly skilled work force, many concur that even developing nations must accord high priority to building capacity in order to effectively utilize technology in education (UNDP, 2009). But there is still a question as to what role rural people themselves may play in order to advance this technological transformation in remote communities.

At present, there are still vast disparities in access to ICT in different regions of the globe. Figure 1 (below) displays access to computer technologies across the globe as of 2010.

Regions/Country	Computer Per 1000 People	Internet Users Per 1000 People
South Asia	18.00	31.0
Africa	32.41	39.0
Latin America	84.58	185.83
Western Europe	522.67	552.67
USA	760.0	690.0

Source: http://info.worldbank.org/etools/kam2/KAM_page3.asp

Figure 1. Global access to computers and Internet per 1000 people.

As this chart shows, South Asia still lags behind the rest of the world in access to computers and Internet technologies. However, the concept of "leapfrogging" is increasingly being used in this context of rural education as a theory of development that may actually accelerate progress by circumventing inferior, less efficient, and more expensive technologies (e.g., wifi obviates the

need to lay miles of costly cable). Thus, it may not matter if access to computers is limited as long as access to alternative ICTs is possible (e.g., mobile phones). Considering this leapfrogging phenomenon, some argue that developing countries are positioned to move directly toward more advanced technologies suitable to their contexts (Goldemberg, 1998).

An advantage of leapfrogging is the possibility that developing countries might avoid environmentally harmful stages of development and avoid the polluting development trajectory of industrialized countries (Cascio, 2004). Along these lines, in Nepal the adoption of solar energy technologies is an example where it is not necessary to repeat the mistakes of highly industrialized countries in creating an energy infrastructure based on fossil fuels, but the Nepalese government is increasingly focused on "jumping" directly into the Solar Age (ID21, 2003).

Evidence of this leapfrogging can be seen in the way that mobile telephony has accelerated in the past decade. In 2002, the number of mobile phones in the world surpassed the number of fixed telephones. At the end of 2008, there were an estimated 4 billion mobile phones globally; and, the majority of these were in low and lower-middle-income countries (Wireless Intelligence, 2008). No technology has ever spread faster around the world (*The Economist*, 2008). Mobile phones now represent the world's largest distribution platform (World Bank, 2009). Furthermore, mobile communications have an especially large impact in rural areas, which are home to almost one-half of the world's population and 75 percent of the world's poor (World Bank, 2007). The mobility, ease of use, flexible deployment, and relatively low and declining rollout costs of wireless technologies enable them to reach rural populations with low

levels of income and literacy. An article in *The Economist* (2008) hypothesized that, "The next billion mobile subscribers will consist mainly of the rural poor" (*The Economist,* 2008. 43).

In fulfillment of that 2008 prediction of the information explosion, a 2011 article in the *The Economist* posited: "Today, mobile phones are the world's most widely distributed computers. Even in poor countries about two-thirds of people have access to one" (*The Economist*, 2011, p. 32). Figure 2 (below) shows this proliferation of mobile devices.
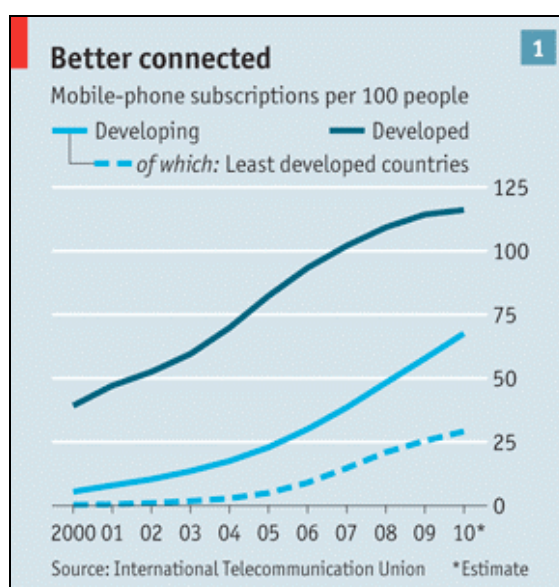
Figure 2. Global mobile phone subscription per 100 people.

Although developing country networks are still basic, they are "a platform on which many other services can be built. This boosts innovation—just as smart phones and faster wireless data networks have led to an explosion of mobile applications" (*The Economist*, 2011, p. 32).

Mobile trading platforms are now used to check and sell agricultural goods. Health information is increasingly available through texting and phone calls on mobile phones. In India, Babajob.com lists low-skilled jobs through text messages and a more detailed website. The most popular items on CellBazaar in Bangladesh are second-hand mobile phones. For people

interested in entertainment, KenyaBUZZ is now one of the larger local websites in east Africa and sells tickets for cultural and sports events over the phone. (*The Economist*, 2011).

Mobile phones are increasingly impacting access to various opportunities across the globe. One example can be seen in Bangladesh: BBC Janala allows people on a few dollars a day to improve their English. After dialing "3000," they can listen to hundreds of English lessons and quizzes that are updated weekly. Mobile operators charge about two cents for each three-minute lesson. Since BBC Janala was launched in November 2009, over 3.1 million people have used it.

However, in the course of this review of literature, I found relatively few documented cases of ICT being used successfully to achieve educational development ends in Nepal. For several reasons, particularly its political instability and rugged geography, Nepal has not yet documented or evaluated the impact of ICT in education, let alone the use of OER. This is in contrast to the myriad publications related to success stories of leapfrogging in its neighboring countries of China and India. So far, the existing literature of the utility of ICT in Nepal appears, at best, to be based on speculation; at worst, some worry that rural people may have latched on to an unsubstantiated ideology of the promise of ICT in Himalayan villages (Shields, 2008).

It is a common assumption that the modern scientific knowledge of the developed nations is sophisticated, advanced, and valid, and, conversely, that whatever rural people may know will be unsystematic, imprecise, superficial and maybe plain wrong. Knowledge found through ICTs usually flows in one direction only—downward—from those who are educated and enlightened and strong, towards those who are perceived as weak and ignorant (Chambers, 1983, p. 87). Shields (2008) adds further insight on questions regarding ICT in Nepali-based education

initiatives. He argues that the benefits associated with ICT in Nepal are highly contingent on a number of contextual factors, including socio-cultural setting, teacher involvement and support, and particulars of the local program implementation. The lack of rigorous evaluations in such settings poses another problem for the claims of effective use of ICT in education.

More high quality research regarding the practical involvement of educators in the field of ICT and NFE is needed in order to provide policy makers, administrators, and program implementers a valuable tool to. Ideally, this would include detailed information on what types of ICT programs are most effective in a given cultural or geographic context, which learners or different demographic groups will benefit most from a given program, and how significant these benefits might be (Muthen, Huang, Jo, Khoo, Goff, Novak, & Shih, 1995). ICT can only improve educational opportunities if first the groundwork is laid for deeper understanding of local contexts, careful appraisal, and quality evaluation of the many possible approaches. If ICT can truly contribute to meeting educational goals in developing countries like Nepal, then a reasoned understanding of *how* ICT can improve educational outcomes must be emphasized in tandem with an acknowledgment of its limitations.

Information access in Nepal is limited by all accounts. The primary cause of such limitations is inefficiencies and constraints in the relationships between the government, private sector, and civil society (Shields, 2008). While other countries in the region (e.g., India, Bangladesh) show possibilities for quality access to information in remote areas, it appears that the challenge facing Nepal is more political than technical in nature. Since 2000, focus on information technology for educational purposes has intensified, especially for underdeveloped countries with handicapped educational systems. Emphasis has been placed on preparing youth

in developing countries to compete in the global knowledge economy; however, some remain speculative of educational technology arguing, "How can we focus on PCs when most rural youth don't even own pencils?" (Pun, 2009).

Several other questions remain unanswered about ICT and education in developing countries. In what ways may learning tools be tailored in high quality, context-rich formats suitable to the needs of rural people? In what formats should information be delivered and generated so it is "digestible" for lower-literate groups? In what ways may existing infrastructures be primed to integrate and utilize such tools? Finally, in what ways may Web 2.0 technologies be integrated so that rural people may contribute their local knowledge to this global system of information exchange?

ICT and micro-learning centers in Nepal. As indicated by Figure 3, the geographic context of Nepal offers a unique set of opportunities and challenges for educational

Figure 3. Political map of Nepal

ICTs. Across the rugged terrain in the landlocked nation of Nepal, international donors, federal government agencies, and civil society organizations have slowly integrated ICT in rural education. In addition to its intense geographic barriers, Nepal is a culturally diverse, multi-lingual country with one of the world's lowest levels of personal income. For these reasons, successful implementation of sustainable ICT programs for education is difficult to say the least.

However a large donor community is eager to help Nepalese people villagers and an increasingly global outlook on ICT and villagers' interest in technology bolsters this community. This ripe context for OER initiatives creates an interesting scene for conducting research. Because of this diversity and the myriad geographic challenges, rural Nepal offers an ideal context to study the practical application of OER in this ripening context of ICT in the educational arena.

Numerous ICT initiatives have been initiated in Nepal during the last decade. Some examples include: the One Laptop per Child (OLPC) project (OLPC, 2011), Himalayan Light Foundation's "Solar Panel Installation" initiative (HLF, 2011), and Himanchal Education's "Wireless Mesh Relay Network" initiative (Himanchal, 2011). These programs differ considerably in their scope and intent; some focus on ICT to support the formal schooling curriculum, while others are directed towards non-formal learners. The government is attempting to utilize ICT as a vehicle for distance education to rural areas (HLCIT, 2010); some NGOs now promote media literacy (UNESCO, 2009); and, others view it as a means to develop vocational skills (Shields, 2008).

NonFormal Education (NFE) centers have received increased focus in Nepal during the past decade since the demand for community-based programming has accelerated and, consequently,

such centers now experience better participation than other formal education programs in the same localities (Bhattarai, 2010; Ivins, 2009; Kahler, 2007). Often referred to as the "Telecenter Movement," this phenomenon is "preoccupied with spreading and sharing new tools and capacities for living, working, and learning. It is a fundamentally distributive, as opposed to an acquisitive, institution and process" (Dorsey, 2009, 16).

These NFE community centers, also referred to as *micro-learning centers*, are known by different names depending on their sponsor and the community where they are found (Ivins, 2009; Shields, 2008). These community-based non-formal education centers may be called: Community Learning Centers (CLC); Community Technology Centers (CTC); Community Multimedia Centers (CMC); Rural Information Technology Centers (RITC); Cyber-Cafés (CC); Tele-Centers (TC); Access Points (AP); and Youth-Managed Resource Centers (YMRC).

In Nepal, over 200 such centers have been created since 2004 (HLCIT, 2009). Each of these centers has varying degrees of uniqueness, but, for the most part, all centers are known as information hubs in communities where libraries are non-existent and schools are often dysfunctional or bankrupt.

These centers share certain common elements: a center manager; an ICT trainer; a literacy facilitator; a community mobilizer; reading materials (newspapers, magazines, books); and information communication technologies (ICTs), including some or all of the following: digital camera, radio, computers, printer/fax, and a telephone.

Local sentiment regarding ICT appears conflicted. Some people are cautious of the spreading of ICT across Nepal; they view it as changing their ways of life and that it holds potential to create factions within families and communities. Others perceive these micro-

learning centers as holding the potential to provide educational opportunity for rural learners who have never before considered learning a possibility. They feel that educational access will be expanded through certain modern technologies that are incorporated into these centers, including: solar-powered, battery-powered, and cost-effective computers, cell-phones, projectors and other devices (Gurung, 2009).

As these simplified, functional micro-learning infrastructures proliferate in remote villages across the Himalayas, rural people are demanding access to information and learning tools that are strategically suited to their personal goals and capabilities. This "micro-learning movement," then, is fueled by an increasing desire by lower-literate local people to participate in designing their own micro-education strategies in order to facilitate access to critical content geared toward solving particular issues in their lives (Ivins, 2009; Shields, 2008). Some argue that the existing paradigms of governance and donor driven agendas have yet to reflect the shift necessary to allow widespread participation of rural people in designing rural education agendas (Pradhan, 2010; Pun, 2009).

Open Educational Resources (OER)

Former UNESCO Director-General, Koichiro Matsumura, declared that, "To remain human and livable, knowledge societies will have to be societies of shared knowledge" (UNESCO, 2005). This statement directly correlates with the objective of expanding the sharing of educational resources through modern ICT. This statement also has relevance to the nascent Open Educational Resources (OER) movement—the sharing of knowledge worldwide through open digital resources.

The term Open Educational Resources (OER) was adopted at a 2002 UNESCO meeting and refers to open provision of educational resources, enabled by ICTs, for consultation, use and adaptation by a community of users for non-commercial purposes (UNESCO, 2002).

> As a force contributing to social and economic development, open and distance learning is fast becoming an accepted and indispensable part of the mainstream of educational systems in both developed and developing countries, with particular emphasis for the latter. This growth has been stimulated in part by the interest among educators and trainers in the use of new, Internet-based and multimedia technologies, and also by the recognition that traditional ways of organizing education need to be reinforced by innovative methods, if the fundamental right of all people to learning is to be realized. (*Open and Distance Learning. Trends, Policy and Strategy Considerations*, UNESCO, 2002).

What does the term *open educational resources* (OER) entail? OER are digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research (Hylen, 2007, p. 3). OER refer to a production and dissemination mode for accessing knowledge but are not accompanied by academic or administrative support to students (Hafner, 2010). OER materials are increasingly integrated into open and distance education activities.

OER include different kinds of digital assets. Learning content includes courses, course materials, content modules, learning objects, collections, and journals. Tools include software that supports the creation, delivery, use and improvement of open learning content, searching and organization of content, content and learning management systems, content development tools, and on-line learning communities. Implementation resources include intellectual property licenses that govern open publishing of materials and design principles. They also include materials on best practices such as stories, publication, techniques, methods, processes, incentives, and distribution.

Another definition of OER proposed by the Hewlett Foundation, a main proponent and supporter of the OER movement is this: "OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others" (Atkins, Brown, & Hammond, 2007). Hilton, Wiley, Stein, and Johnson (2010) offer a concise summary of the things users are permitted to do with OER as the "4Rs:" reusing, revising, remixing, and redistributing content.

The OER movement expressly aims to increase access to knowledge and educational opportunities worldwide through sharing educational content. Open content is sometimes referred to as the democratization of knowledge since it is designed to allow beneficiaries everywhere to also participate in improving content and sharing modified resources back to a growing pool of knowledge. The largest open content project in the world is Wikipedia.

Many contend that leveraging ICT to equalize access to education is critical in a world with over four billion poor people who have little access to formal education (Pereira, 2007). Indeed, academics and practitioners across the globe increasingly believe that mainstreaming OER as a public good could make an enormous contribution throughout the developing world. (ISKME, 2011; Pereira, 2007; UNESCO, 2002; Wiley, 2007)

However, several questions arise from this movement: Who are the real beneficiaries of OER? Do those on the ground (who cannot afford to pay for education and who have perhaps the most to gain from accessing it) actually benefit from OER? What delivery mechanisms may allow OER to really "go the distance" in order to expand the right to education for *all*? (Tomasevski, 2007; Wiley, 2007a; Wiley, 2007b; Wiley, 2010b).

Although quality information is more readily available now than ever before, many question whether the technologies of distance education, including OER, act as an enabler or as a barrier to achieve the universal right to education. D'Antoni stated in her paper for the 2007 Open Education Conference, "If knowledge is to be shared as OER, new approaches will be needed to reach those most in need" (D'Antoni, 2007). It is increasingly recognized by OER practitioners that there has been an implicit assumption that knowledge flows from developed to developing countries, and little attention has been paid to the special needs and requirements of institutions in the South, as well as the contributions they can make to a universal knowledge commons (OER Toolkit, 2009).

Thus, while OER substantially impact the resource bank for distance education, strategic vehicles for delivering such tools are still needed for disseminating critical content to learners who seek it, particularly those in rural areas. And, in order for OER to enhance the expansion of the right to education in developing countries, certain priorities must be addressed, including the ways that rural people may participate in activities such as: awareness raising, capacity building, quality assurance, and sustainability (D'Antoni, 2007). These priorities delineated by D'Antoni appear directly linked to making OER functional through the processes of *localization* (Wiley, 2007b).

OER and rural educational development. With the advent of the Open Educational Resource (OER) movement, it is anticipated that education is now pivotally placed for extension to remote and rural communities at little or no cost (Hewlett, 2006). Instruction and learning have been bolstered through availability of mostly higher-education content through OpenCourseWare (OCW) and other communal, non-proprietary information repositories.

Today, OER supposedly hold great potential for learning in developing countries even though they barely reach those at the bottom of the economic pyramid (Mackintosh, 2011; Prahalad, 2005).

The OER Foundation (a consortium of educators, donors, and development experts) seeks to extend the philosophy and benefits of open source through open educational resources (OER) and open content. The OER Foundation galvanizes a team of educators from around the world to brainstorm ways that content may be shared as a public good. This includes ways that content can be better harvested, shared, localized and disseminated to even the most disenfranchised learners, including those in developing countries (OERF, 2010). Proponents of OER highlight their shared goals that include cost-effective sharing of high-quality, organic tools for sharing, mixing, and reusing educational tools (OERF, 2010).

Mackintosh (2009) acknowledges the potential of OER are still only barely comprehended by would-be beneficiaries around the globe. Once the power of OER are unlocked, it may transform opportunities for rural and disenfranchised groups with access to knowledge that is broadly available but still inaccessible to those who need it most (Mackintosh, 2009).

However, unanswered questions exist regarding the best formats in which OER can and should be delivered in developing countries. In what manner can facilitators and individuals be prepared to localize content from OER reserves? What training and infrastructures must be created or bolstered in order to benefit rural communities, particularly those in hard-to-reach areas (e.g., remote Himalayan villagers)?

Perhaps some lessons learned in the developing world through the Adult Basic Education (ABE) movement hold relevance for the OER movement with regard to rural educational development. Recognizing that "you don't know what you don't know," ABE advocates developed and utilized awareness-raising techniques (Nabi, 2009; Kahler, 2008). Also called *conscientization campaigns* (Freire, 1972), these proactive efforts have been and still are integral components of effective rural development campaigns. ABE initiatives empowered villagers in developing counties by helping to foster villager's understanding of alternative possibilities in contrast to their existing outlook on life (REFLECT, 2008). Similarly, in order for OER to gain a real foothold in rural developing countries, awareness needs to be cultivated about OER and the opportunities that OER provides.

Other lessons learned in the ABE movement reveal that literacy class participants rarely enroll because they wish to read for reading's sake. The majority of literacy students view literacy only as a vehicle to finding knowledge that they hope will help them solve problems in everyday life. This critical content is a working tool to initialize social change in the areas of health, income-generation, agricultural yield, or other community development activities.

According to Freire, "The fundamental question about education is, 'What is *to know*?'" (1972). For most people, especially those in developing countries, 'to know' is '*to do*.' Thus, the relevance of OER in developing countries appears to be tethered to open content localization and customization through innovative delivery mechanisms. However, this claim has yet to be substantiated with evidence from the rural practitioners who use OER in developing country settings.

OER localization and knowledge-workers. Localization is a term that co-emerged with the open educational resource (OER) movement. This is because OER can only achieve their potential when they are modified and packaged for the specific needs of learners (Atkins et al., 2007; Wiley, 2011). Customization of content to better suit learning is termed *localization* because the measures employed to make OER useful attempt to pay particular regard to situating content within *local* needs, *local* culture, *local* geography, *local* technologies, *local* infrastructures and *local* issues.

There are many questions regarding the processes whereby localization takes place. Wiley, the pioneer of the term *open content,* theorizes that without an OER champion the power of openness is limited in its reach (Wiley, 2011). In order to be effective then, it has been advised that open educational resources must be shared through local champions (also known as change agents or knowledge-workers) who view themselves not only as champions of openness, but as well as champions of localization as well.

But who are these *champions*? What are the daily practices that they are involved in? What barriers do they face and what strategies do they employ to overcome such challenges? It has been theorized that these individuals involved in localizing OER must be aware of ways to help content go through several processes in order to gain more utility for learners on the ground. It is believed that, in this way, critical content may gain both meaning and importance, often being referred to post-facto as *localized content* or *value-added content* (Bhattarai, 2010; OKN, 2010).

However, there are few studies that have been conducted to answer these questions related to localization. The limited literature that does exist is primarily speculative and lacks an

evidentiary basis for supporting the theory regarding the connection between localization and OER utility.

Literature within the development sector reveals that change agents have long been the champions of development (So, 1993). In rural communities, those who broker knowledge and presumably perform such localization activities include: literacy facilitators, community health volunteers, agricultural extension agents, community youth club volunteers, and ICT managers. In Nepal, these change agents involved in OER pilot projects are called *knowledge-workers*; these leaders of ICT-based educational initiatives help design strategies to facilitate access to information in rural community centers, (Bhattarai, 2010; OKN, 2010).

ICT and OER in Nepal

ICT and OER are increasingly combined to support learning in rural community centers of developing countries. As mentioned earlier, over 200 community centers in Nepal now explore creative combinations of ICT in order to transform educational paradigms. Innovative center managers increasingly focus on customizing content to learner abilities and interests— building momentum for the so-called *micro-learning* movement. In contrast to macro-education (a one-size-fits-all design for rural curricula, learning structures, or pedagogies), micro-education is an attractive alternative concept in which educational options may be created and packaged in a low-cost, tailored manner, according to the desires, experiences, and goals of individual students (Ivins, 2009; Bhattarai, 2007).

The scaffolding of the micro-learning movement is built from basic literacy resource centers that are converted into *micro-learning centers* which are community centers enhanced by both ICT and OER. In this vein, global and local groups in Nepal partner together to establish

micro-learning centers that support non-formal education (NFE) in low-cost centers in rural villages across the Himalayas. However, sustainability of these micro-learning centers is constantly a question for donors and beneficiaries alike (OLE, 2010; Bhattarai, 2010; HLCIT, 2009; White, 2009). A central issue of sustainability and a deterrent for some prospective users of these NFE centers is the lack of critical content available in such centers (HLCIT, 2010; Pun, 2009).

While OER are believed to provide a strategic opportunity for infusing micro-learning centers with quality content (Hewlett, 2009), the delivery of such knowledge to rural lower-literate poor requires *brokers* of knowledge (e.g., knowledge-workers) who localize content in a kind of *cultural camouflage* (Zuckerman, 2000), or cultural packaging. These knowledge-workers (dubbed by some communities as *village ambassadors*) seek out materials that are congruent with villager's needs and find ways to package them in a suitable way for villagers.

In answer to the sustainability question, a handful of micro-learning centers now explore a strategic *micro-franchise* model whereby open content may be matched to the needs of a broader catchment of disenfranchised learners through paid local service agents, or knowledge-workers. This micro-franchising model builds from the *triple-bottom-line* concept (reaping economic, social and environmental profit), an innovative approach to sustaining local businesses while meeting critical social needs through locally-based trained service agents. Some successful models of micro-franchising in rural communities are those which vend and distribute safe drinking water, prescription eyeglasses, and insecticide-treated mosquito-nets. (Fairbourne, 2007).

While open content exists free of charge through an open portal, in this unique micro-franchise design, learners pay a nominal fee for the services of content customization (e.g., localization) and mentoring services provided by indigenous experts and local leaders. In turn, these knowledge-workers pay for computer use, Internet surfing, or technology-enabled scaffolding in micro-learning centers whereby they search for, localize and package content for those whom they serve. In this way, a small economy emerges through the services generated in a micro-learning center.

This micro-franchising model allows local and external social entrepreneurs to invest in poor countries, allowing them to do well and do good at the same time. Start-up funding and training may be given pursuant to approval of a grassroots-developed strategic plan. After that, micro-learning centers begin to provide services and generate profits to pay back their original loan. Over time, other centers may receive those funds and training so the cycle may continue.

Although micro-franchising is still a new phenomenon, three salient benefits are relevant to expansion of OER in developing countries: job creation, specific capacity-building, and effective delivery of localized content. The medium of micro-franchising has been termed "The Next "Big Thing" in a recent *Economic Times* article because of its potential for facilitating linkages to value chains, continued training, ongoing mentoring, scalability, and business creativity (Aiyar, 2007). Educationalists like the concept because it innovatively transfers knowledge; business people like it because it generates profits while delivering services to the base of the economic pyramid.

Understanding how these micro-learning centers work on the ground as well as refining this model of disseminating content is central to providing rural people with practical strategies

to access open educational resources.   Beyond this, the fee for services paid to knowledge-workers and micro-learning center operators creates the opportunity to sustainably pay for training in order to (1) utilize and tailor open content resources; as well as to, (2) develop new learning materials focused on the needs of remote communities.

Galvanizing together the concepts of OER, micro-learning centers, and micro-franchising, it appears that extension of the right to education has never before been so within reach of millions of learners across the developing world. This is in synch with what Prahalad proposes: "widespread development and poverty alleviation will only occur if we stop thinking of the poor as victims … and start recognizing them as resilient, creative entrepreneurs and value-conscious consumers" (Prahalad, 2005).

In order to survive, micro-learning centers have learned that they must be in the information and communication business (or the community development business), not only the computer and Internet connectivity business. Their mission is broader and more complex than the cyber-cafe or phone-communication needs of other local organizations. Effective centers are those that are creative and entrepreneurial in dealing with these needs. It is this very comprehensive and community-focused approach to accessing knowledge that helps centers become firmly woven into the fabric of the community and well on the road to self-sufficiency.

However, where can one find a sustainable and practical model of such a union? What is the golden praxis of enhancing knowledge, increasing market access, and expanding freedoms? In order for micro-learning centers to be bolstered through OER resources, it is imperative to understand more about the processes involved in localizing and disseminating content.   More

research must be conducted in this arena if we are to expand education through a systematic, yet organic, process of accessing, localizing, and disseminating information.

Local Content in Nepal

The Okinawa Charter (2000) on the Global Information Society represents a universal call for both the public and private sectors to bridge the international information and knowledge divide (OKN, 2001). As part of this, the Digital Opportunity Task Force (DOT, 2001) was created to particularly focus on the needs of developing countries. The DOT Force in Nepal emphasized the need for localization of content:

> "Poor people must be able to express and communicate locally relevant knowledge in local languages if they are to shape the decisions that affect their livelihoods. Local content development is closely tied to human development, and the ultimate goal of this is the empowerment of local communities." (ENRD, 2010, p.3)

This statement is in contrast to some perspectives that digital solutions to poverty are secondary to addressing core development issues. Instead, the DOT posits that creating digital opportunities is not something that happens *after* addressing the *core* development challenges; digital opportunities are a central component in order *to* address those challenges in the 21st century (DOT, 2001). Against the political backdrop of Nepal's changing democratic structures emerge questions regarding the roles that local media and ICT might play (Martin, Koirala, Pandey, Adhikari, Prasad, and Kiran, 2007). And, providing content to Nepalese learners in vernacular formats whereby they can gain power to participate in decision-making is arguably supporting the movement toward a democratic republic. Indeed, it is never easy to divorce the wider political context from the way information about the community, society, and nation are understood and administered (Martin, et al., 2007).

Content was listed as one of the key areas of focus for the Nepalese Digital Opportunity Task Force. Content is viewed as an integral part of the framework to help guide stakeholders to invest in and implement strategies that take advantage of ICT to accelerate social and economic development. The objective of doing this is also intricately tied to content localization: "Provide demand-driven information that is relevant to the needs and conditions experienced by the people" (DOT, 2001, p. 34).

Indeed, one of the biggest challenges a micro-learning center faces is to provide relevant information and services for its unique variety of stakeholders. To survive, these centers must be substantially demand-driven. Some organizations have started working on the issue of content, but much of the information currently available through existing and electronic networks may not meet communities' needs for local information on local agriculture, health, and economic issues. As an information access point, micro-learning centers may also lose relevance if information is in unfamiliar languages or dialects. Indeed, if anything can be learned about content, it is this: "Educational programs that require sensitivity to local culture and language are best developed within a nation's borders" (Dorsey, 2009, p. 29). Thus, the onus of creating local content is on the locals themselves and, as such, building the capacity for knowledge-workers to create and share local content is a key priority in this new information age.

In an evaluation conducted in Nepal by One World South Asia (OWSA) of the multi-stakeholder initiative Open Knowledge Network, it was concluded that "the indigenous knowledge of [the] community is a valuable resource that motivates local livelihood. The specific information and communication needs of [the] community should be recognized and

duly addressed. The creation and exchanges of local and locally available relevant content should be customized to satisfy their needs in local languages" (OWSA, 2007, p. 23).

It is still only hypothesized that OER content may be a vehicle through which rural Nepalese villagers become self-reliant and that, once localized, open content may hold the power to enable them do their own problem-solving. OER advocates in Nepal believe it is time to understand localization processes better (Bhattarai, 2010; Pandey, 2010; Pradhanang, 2010; Pun, 2009). Based on a review of the literature related to micro-learning centers, non-formal education, and sustainable access to knowledge, a central concern is this: "How do people get the information they need and want in the way they want it?" This dissertation is focused on answering that question

Literature Review Summary

Education is hampered and poverty is exacerbated in rural developing countries partly due to of a paucity of access to information. This challenge may be addressed by building capacity of rural facilitators and knowledge-workers (change agents) in community learning centers. Service agents now explore strategies to localize content open content in order to connect villagers interested in using it for problem-solving and improving their quality of life.

Furthermore, achieving expanded educational opportunity in developing countries is increasingly attempted by harnessing the benefits of 21st century ICT educational tools. Micro-learning centers, micro-franchising, and OER are nascent concepts that arguably hold relevance for increasing access to knowledge for rural learners across the globe. One salient component of these community technology centers appears to be the local knowledge-workers who are trained in appropriate technologies and equipped with tools for localizing and disseminating OER. If

these concepts of localized content and OER hold the power to transform learning in developing countries through meaningful learning tools, it is imperative to understand how localization of content works (and doesn't work) and why.

This chapter and the one that precedes it have offered context for this study. The first chapter focused on an overview of the project and situated the research. The second chapter explored the background of nonformal education, ICT, and OER in international development with a particular emphasis on trends in Nepal during the past decade. In the next chapter, I will describe the methods and methodology of my own research regarding localization of content for rural education in Nepal.

CHAPTER 3: METHOD

This chapter describes the methods and methodology used to investigate my research questions. I begin by providing my own background as a researcher with regard to this project, thereby disclosing my own interests, context, biases and hypotheses that frame this study. I then provide a methodological overview of this study and situate the study within the epistemological context of contemporary social science research while describing the chosen methodology, methods, and particular approach for this study. Next, I present an overview and justification for the qualitative research design I employed in this research and explain the specific data-collection methods within the framework of chosen research methodologies. Then, I describe data analysis and expound on methods for interpreting data and discuss issues of trustworthiness and validity. Finally, I conclude with a review of the ethical implications of social science research and how they are addressed in this study.

Researcher Background

I have conducted eleven field studies in Nepal since 1999 as a field trainer, researcher, and program officer for international educational organizations. Most of my field experience has been in a professional capacity as an employee or consultant for ProLiteracy Worldwide (formerly Laubach Literacy International), World Education, and Community Development Network. Five of these field visits to Nepal have been during my time as a doctoral student. During the course of this study I have made deliberate choices to wear an academic hat instead of a practitioner hat in order to see trends, practices, and realities through a research lens. However, I am still very much influenced by my practitioner lens and most appropriately labeled a practitioner-researcher as described by Arcy, Jacobs, Razavieh, and Sorensen (2009).

Researcher interest in this study. My original involvement in this research began with a general focus on literacy programming. My interest in literacy and rural education grew out of experiences working in literacy programs in developing countries of Africa, Asia, Latin America and the Middle East.

I centered the focus for this dissertation on Nepal since it is the country where I have the most experience. Beyond this, Nepal is an interesting arena for research since its extremely mountainous terrain impedes access to education and other critical services like healthcare. Since dissemination of critical information is significantly delayed in Himalayan villages, literacy rates are substantially lower and mountain villagers are often a day's walk from schools.

The particular topic for this study was chosen because I have learned during the past 14 years that sustainability is a central concern of stakeholders at all levels of literacy programming. After visiting and discussing with countless newly-literate participants in programs around the world, their concerns echo and parallel each other: "What will we do now that the program is finished?" "How do we sustain this progress when there are no reading materials in our village?"

During this time, it has always been shocking for me to see two things: (1) how resourceful people are despite great geographic, economic, and social barriers; and, (2) how frustrating the delay of resources can be to people in dire need (with particular regard to educational resources but with simultaneous regard to health, agricultural, and informational resources). For 15 years I have been interested in exploring possible strategies to remedy this paucity of resources through a sustainable, cost-effective approach that enables access for individuals to solve their own problems through their own self-reliant means.

In 2004, I was asked to help facilitate a workshop in Nepal titled, "Education and Technology in Nepal" (CDN, 2004). The main focus of this meeting was to consider strategies offered by new technologies relevant to supporting literacy programs in Himalayan community learning centers. I worked with a team to collect perspectives from stakeholders of NFE across a broad spectrum, including government ministries, UN agencies, civic groups, and local villagers.

I learned many insights during this time regarding ICT interventions as a possible tool to improve rural literacy and well-being. While a majority of the respondents affirmed the need for a nexus of technology and education, the effects of such initiatives on remote programs and actual literacy attainments in Nepal were still undetermined and some stakeholders were cautious. A particular concern was regarding the compatibility of local content with ICTs and its suitability for the various cultural, social, and geographic contexts of Nepalese learners.

During that time, I also learned that there is high grassroots demand from local villagers for ICT, especially among youth. Communities' interest for local tele-center initiatives (community centers infused with ICT) was already strong: despite electricity outages and erratic dial-up internet in one center, 50 people would queue daily for two outdated computers where they sought training, email exchange with relatives abroad, access to websites reporting agricultural prices, and other information available through ICT related to health, employment, and micro-enterprise. In the seven years that I've been tracking this movement since that time (2004), ICT proliferation has accelerated in Nepalese villages and the NFE world is increasingly impacted by educational technologies. In tandem with this, my own interest in this research has also grown.

Researcher context and bias. My original interest in literacy stems from my 18-month immersion in the rural Philippines as a volunteer service missionary. Living only with Filipinos, I learned to speak fluent Tagalog—an essential tool for full participation in community development activities. Being illiterate to Tagalog and being a second-language learner shaped my own sensitivity to the feelings of inadequacy and alienation inherent with illiteracy. This was my first experience promoting self-reliant behaviors through holistic literacy programs for women and it profoundly influences my own views and teaching approach as a trainer and facilitator. I believe that education is inextricably tied to problem solving and that it positively impacts awareness of and ability to improve human rights, health, and income-generation.

After this experience, I added International Development to my academic pursuits. I started working for the International Kennedy Center and I interned for three summers in South Africa, developing literacy classes for Xhosa women in townships and rural areas of the Eastern Cape. Upon graduation from BYU, I began professional work with Laubach Literacy International (NY) and, later, with the Community Development Network (UK). As a liaison between country partners in South Asia and Southern Africa for nine years, I worked on literacy projects especially targeted at discriminated groups in Nepal, Thailand, South Africa, Zimbabwe and Honduras.

I completed my Masters Degree in International and Comparative Education at Oxford University where I conducted research in South Asia, particularly Nepal. My dissertation, *Female Literacy for Rural Well-Being in Nepal*, investigated holistic education in rural Himalayan villages. I examined the interrelationship of a localized health-literacy program and

public health indicators, interviewing stakeholders (particularly women) in projects sponsored by UNESCO, USAID, AED and other NGOs.

After completing my Master's Degree, I worked for World Education in Boston as a program officer for South Asia, focusing my work on literacy programs in Pakistan, Nepal and Bangladesh. It was during this time that I gained heightened understanding of the utility that technology can potentially offer to rural community education centers and to the field of non-formal education in general.

I helped to design a USAID-sponsored pilot project for building Literacy Resource Centers (LRC) during 2005-2007 to investigate possible options for bolstering literacy sustainability in rural Pakistani communities. Overwhelmingly, the LRC representatives and their beneficiaries requested computers and the Internet. They said that relying on materials to be shipped from Karachi was inefficient at best and pointless at worst. LRC leaders proposed that ICT would make LRCs more attractive to users and more efficacious in supporting rural learning. The strongest advocates for this change were youth.

During this time (2005-2007), I learned that youth (a broad term encompassing ages 12-35) are often the key triggers for community development in rural countries. This dovetails with experiences I had during 2003 when I spent two months facilitating youth leadership development and literacy training in UNHCR Refugee Camps in Sudan and Kenya. All of these experiences drive my interest to be a catalyst for educational innovation and to enable others to create sustainable solutions based on their own situations and respective contexts.

During these experiences, my personal biases have sometimes been challenged and other times have been solidified. At the time of writing this research, my current view is as follows:

1) All human beings have the potential to learn and progress; 2) Agency is activated and expanded by knowledge; 3) Literacy is a powerful way to amplify individual knowledge and agency; 4) Sustained access to new knowledge improves the opportunity for people to solve their own problems; 5) We are better prepared to solve our own problems if we utilize knowledge that makes sense within our own context and experience (including, but not limited to religious, cultural, political, social, and geographic paradigms).

Researcher hypothesis. This research study draws upon experiences I have gained in a professional and a personal capacity during the past 15 years while working in the field of literacy. Furthermore, my eleven years of experience in Nepal impacts my perspective as a researcher in ubiquitous cultural, religious, and geographical, settings of Nepalese villages.

My hypothesis was that OER could be a benefit to Nepalese people if there was sufficient support to enable the localization of content. I believed that trusted knowledge-workers in or around their own communities would be integral in the process of localization, but I did not know to what degree they felt capable to design and execute localization tasks to benefit fellow villagers. I was also unsure what obstacles they face in order to localize effectively.

For the reasons given above, I primarily focused on understanding what worked well in OER localization practices and what can be improved in the particular context of non-formal education in Nepal. I focused on three main areas of investigation: the current practices used by knowledge-workers to localize content, the extent to which they feel that they are localizing, and the strategies they employ to overcome obstacles to localization activities.

Methodological Overview

I will now explain the epistemological framework that undergirds this study. I will then detail my methodological approach, the related methods for inquiry, and the research activities I employed to collect the data.

Epistemological framework. The epistemology for this research is grounded in a post-structuralist perspective which opposes positivist claims to objective knowledge of social phenomena. In contrast, I am aligned with a viewpoint that knowledge is "socially constructed and cannot be separated from its cultural context" (Shields, 2008, p. 93). This framework creates substantial challenges for the researcher, who must also acknowledge that her work is also socially situated and cannot claim to represent an objective reality or truth of social events and behaviors. Anthropologists refer to this as a crisis of representation in the human sciences that is rooted in uncertainty about adequate means of describing social reality (Marcus & Fischer, 1986).

I agree with Shields (2008) who contends, "[this] representational challenge requires a fundamental rethinking of what constitutes valid knowledge and how it is constructed through research" (Shields, 2008, p. 93). Indeed, contemporary research cannot rely upon a single method to constantly yield valid results; rather, researchers must approach every study as a unique situation with its own set of methodological constraints and possibilities (Shields, 2008).

Thus knowledge and meaning in this study arise from mediation between the researcher's preconceptions and the critical reflection and dissonances that arise from the research experience. Gadamer (1975) argued that people have a *historically effected consciousness* (wirkungsgeschichtliches Bewußtsein) and that people are embedded in the particular history and

culture that shaped them (Gadamer, 1975). Hence a researcher interpreting an experience involves a *fusion of horizons,* where the researcher finds the ways that the observed event or subject articulates with their own background.

Merleau-Ponty's philosophy is also a sustained argument for the foundational role that perception plays in understanding the world as well as engaging with the world (Baldwin, 2008). In light of this, I do not claim that the results of this research will objectively represent reality. Instead, I will utilize the results of this study as a vehicle for recording and analyzing the experiences of the research subjects and the researchers involved in this study with the hope that significant patterns or trends will emerge in order to help illuminate better understanding on the topic of localization of OER in Nepal.

Methodological approach. This study is primarily hermeneutic in nature and is augmented by phenomenological inquiry and a quasi-ethnographic approach. This research is hermeneutic in the way described by Kvale in that it is largely focused on understanding people, their culture and their practical activities within their community (Kvale, 1996). This study draws upon the practical research approach utilized by South (2008) and employs a hermeneutic phenomenological ethnographic research approach as explained by theorists such as Kvale (1996), Packer (1985), and vanManen (1990). South (2008) explains this blend of methods as a highly practical approach to understanding practitioner's lived experiences through a study supervised by Dr. Stephen Yanchar.

The research lends itself to hermeneutic inquiry in that it is focused on studying and interpreting human behavior and social institutions through analysis of tools, artifacts and people (Kvale, 1996; Packer, 1985). A phenomenological approach is employed in the sense that this

research draws unique interpretations and conclusions of experiences based on my own context (Spinelli, 1989). It is quasi-ethnographic in that it draws on narratives from practitioners who were interviewed in their own communities and observations were made regarding their *natural* settings as much as possible (e.g., situating data within its many layers of context). After all the data were collected, I then employed a coding and sorting process which was also developed by theorist Stephen Yanchar (South, 2008) in order to analyze results, draw key themes, and provide suggestions.

In order to achieve methodological triangulation, I employed not only a blend of theories, but also multiple strategies for collecting data, including: interviews, observations, focus group discussions, and artifact reviews. I will now explain more about the reasons I chose this particular combination of methodological approaches by discussing more about what they are and how they will be employed in this research.

Hermeneutic Inquiry. For the purposes of this social science study, the definition of hermeneutics I've chosen is: "the interpretation and understanding of social events by analyzing their meanings to the human participants and their culture" (Gadamer, 1975). This research approach emphasizes the importance of the context (Willis, 2007) as well as the form of any given social behavior.

The core principle of hermeneutics is that the meaning of an action or statement is only understood when relating it to the context, or *worldview* (e.g., larger context), from which it originates, or, in other words, the *whole discourse*. One example can be seen when putting a piece of paper in a box. This act might be considered meaningless unless it is seen in the context of democratic elections, and the action is putting a ballot paper in a box. One can frequently find

reference to the *hermeneutic circle*. This term implies "relating the whole to the part and the part to the whole" (Gadamer, 1960).

With regard to this qualitative study in which interviews with one or a small number of people are closely read, analyzed, and interpreted, I have employed hermeneutic inquiry in order to situate the data collected. I have chosen this methodological approach largely because I agree with Gadamer and Heidegger that understanding isn't fixed but rather changing and always indicating new perspectives. The most important thing with regard to this is the unfolding of what constitutes individual comprehension.

Gadamer points out in this research context that prejudice is a (nonfixed) reflection of that unfolding comprehension, and it is valuable (Gadamer, 1975). Being alien to a particular tradition is a condition of understanding. In this light, we can never step outside of our tradition; all we can do is try to understand it. As an American researcher in a foreign world of Nepal, my own context and experiences frame my own deductions and understandings recorded in this study. This is evidence of Heidegger's idea of the hermeneutic circle - the reciprocity between text and context (Grondin, 1994).

Interpretive phenomenological inquiry. Many qualitative psychologists have regarded phenomenological inquiry to be essentially a matter of *meaning-making* and thus a question to be addressed by interpretive approaches (Landridge, 2006; Seidner, 1989). In this study, the central focus of phenomenological inquiry lies in "the analysis of how all of us arrive at unique interpretations of our experience…through social constructs and frameworks" (Spinelli, 2005, p. 4). This is important in my own approach for this research in that I was involved in helping respondents to draw out meaning from their own experiences and to jointly construct meaning

together while interpret meaning from the interviews, site visits, focus group discussions, and artifact reviews, that were employed in this study.

Phenomenological inquiry was utilized to both clarify and expose the (often hidden) biases and assumptions within systems and languages (Spinelli, 2005). This interpretive-phenomenological approach is in line with the work of Husserl, Heidegger and Merleau-Ponty and defines *experience* as a significantly more complex concept than it is used in ordinary speech. The description of experience is sometimes referred to by the term *qualia*, or in other words, *redness*. For example, one might ask, "Is my experience of redness the same as yours?" While it is difficult to answer such a question of *redness* in any concrete way, the concept of inter-subjectivity as explored by this phenomenological research is a strategic mechanism employed in this study as the means whereby empathized with the research participants' experiences despite our cross-cultural differences or other contextual distinctions. Indeed, this concept was helpful to this particular investigation in order to engage in meaningful communication with and about *the other*. The phenomenological formulation of Being-in-the-World, where person and world are mutually constitutive, is at the core of this (Giorgi, 2009). Perhaps paradoxically, but central to my approach of phenomenological inquiry in this dissertation, this understanding of inter-subjectivity has substantially increased my understanding of the shared qualities and features of between them whom I studied and myself.

Furthermore, this concept is relevant in the context of Nepal, where there are 120 native languages (GoN, 2009). The strengths and weaknesses of rural people's knowledge are tied to deeper meaning that is embedded in their languages and concepts. Robert Chambers (1983) explains, "What is perceived affects the language evolved to describe it; and language, in turn,

provides concepts and categories which shape perception. Colour discriminations are an example of this" (Chambers, 1983, p. 93). This adds a new dimension to the question of *qualia*, or *redness*.

In Nepal, some local words and concepts are inclusive rather than differentiating, thus combining categories that the outsider is trained to keep separate. In Nepal, *khanaa* (food) is used interchangeably with the word *bhaat* (rice). Sometimes the opposite concept is true: in Nepal there are over 20 different words for *rice* in its different phase of growth in the field, in the kitchen, and on the table. But, in English the item referred to in all these different phases is simply known as *rice*. Appreciating the background of language and this spectrum of meanings is important if outsiders are to understand rural people's ways of thinking and to avoid misunderstanding them as well as to avoid misrepresenting them when doing social research.

Ethnographic research approach. Unlike many kinds of research, "ethnographic research . . . examines entire environments, looking at subjects in context" (Lauer & Asher, 1988, 39). Because the ecology of rural life in Nepal is rich and complex, the data have no meaning if divorced from their context. Indeed, Linda Brodkey notes, "Ethnography is the study of lived experience" (Chiseri-Strater, 1991, p. 183). I have borrowed some concepts of ethnographic research in order to understand the data generated in this study according to the cosmos of its sociological, political, cultural and geographic realities.

This study seeks to understand the lived experience of practicing knowledge-workers and the communities that they serve. As Beverly Moss states, the ultimate task of the ethnographer is "to describe a particular community so that an outsider sees it as a native would and so that the community studied can be compared to other communities" (Wiley, 1996, p. 389). For this

reason, in my interactions with the participants and the various data collection activities for this study, I attempted to situate all data within its context and to do so as comprehensively as possible.

This study is only quasi-ethnographic since it was not possible for the researchers to experience prolonged engagement in the communities where the research was conducted. It is ethnographic in the sense that it seeks to answer central anthropological questions concerning certain ways of life of living human beings.   This study seeks to understand the ways that knowledge-workers link their behavior to their culture and how the culture(s) in the community are impacted by OER and vice-versa. While the database for ethnographies is usually extensive description of the details of social life or cultural phenomena, this dissertation only provides a small insight to seven communities where knowledge-workers perform localization activities.

Although most ethnographers engage in participant observation, meaning they participate in local rituals and daily life as much as possible, this study did not lend itself to prolonged engagement in the communities where research was conducted. Instead, this dissertation sought to draw connections and common themes between the knowledge workers in different communities and to find core principles of the ways that human beings in rural areas approach learning and the methods they use to customize learning materials to improve problem-solving.

The author recognizes that, while anthropologic research attempts to understand realities from an *emic* perspective (a native point of view), there is an inherent tendency (bias) of a foreigner conducting this kind of research to resort to an *etic* perspective (an outsider's perspective on local life). While this study is primarily hermeneutic in nature, it was deemed prudent to incorporate certain aspects of ethnographic research to the data collection during site

visits to the seven micro-learning centers. Some of these ethnographic tools employed include: an emphasis on observations of knowledge-workers and the many layers of content access, use, and dissemination while conducting site visits. Additionally, the researchers employed open-ended questions through a semi-structured interview process and the primary data used to summarize findings were field notes of the four researchers who were involved in collecting data. This study also gathered whatever site documents, artifacts, and peripheral data that helped build the context necessary to situate the narratives, case studies, and observations used to interpret meaning in this study.

Research Design

This study is part of a larger study on open educational resources (OER) currently being conducted by the Nepalese Government's High Level Commission for Informational Technology (HLCIT). A research team has been formed for this study by the principal investigator, Tiffany Ivins, PhD Candidate at Brigham Young University (BYU) in the Instructional Psychology and Technology (IPT) department. Other members of this research team include: Manohar Bhattarai (Vice-Chair of HLCIT, second to Nepal's Prime Minister), Rohit Pradhan (UNESCO Regional NFE Program Director; Director of Programming for World Vision International); Ramita Shrestha (President of Sankhu Youth-Managed Resource Center); Shrutee Shrestha (Nepal Program Officer for Community Development Network); Dr. Lynn Curtis (Vice-President of International Programming for ProLiteracy Worldwide); Sanjeep KC (Nepalese research assistant from BYU); Tara Pandey (Nepalese research assistant from BYU); and Rajendra Maharjan (TMUC Program Officer and Logistical Coordinator).

This study utilized semi-structured interviews with stakeholders of non-formal education

(NFE) in Nepal, including: government, UN, international and national NGOs, trainers, knowledge-workers and learners. The primary data collection events transpired through seven different site visits to micro-learning centers wherein I observed activities, facilitated focus group discussions, studied artifacts, and interviewed knowledge-workers and beneficiaries of the micro-learning centers in their own environments.

This research project explored patterns and trends of content localization as performed by knowledge-workers and themes regarding the challenges to customize information for use by learners in micro-learning centers. Data was examined through processes of coding, sorting, and memoing in order to draw out common patterns and themes regarding localization as it pertains to non-formal education in Himalayan villages of Nepal. This project was focused on data triangulation regarding content localization practices and challenges in light of the current technological, economical, political and socio-cultural scenario of Nepal.

Justification of research design. The hermeneutic phenomenological approach utilized in this study is aligned with a description given by Packer (1985) that knowledge is composed of practical activities, such as everyday involvement with people, tools, and artifacts. Building from this highly practical orientation, the researcher conducted semi-structured qualitative interviews with knowledge-workers in their natural settings about their practices working with content and tailoring it for those whom they teach.

Drawing from the ethnographic tradition, the researcher was able to investigate the knowledge-workers' and learners' perspectives through their own descriptions regarding OER localization and content customization. As much as possible, the researchers and interpreters conveyed the feelings of the participants in their own words and according to the participants'

own criteria for localization. This was in contrast to other research patterns that impose a rubric or prescribe definitions of importance to the stakeholders (Williams, 2008). This quasi-ethnographic approach to inquiry was used by observing people in their own communities and emphasized a focus on establishing joint-construction of meaning as we interacted together. The team of researchers worked together to understand the meaning of local people's actions and to describe the nature of those who were studied through field notes written during interviews, focus group discussions, and observations (Naroll & Cohen, 1970).

With this in mind, the researchers recorded experiences with the simultaneous acknowledgment that this process of recording inherently involves reduction and distortion. Analysis and interpretation of these data are not contending to represent the single and totalizing objective reality, but rather "a form of mediation" between this recorded experience and the theoretical, cultural, and social contexts that inform the study (Willis, 2007).

Previous pilot study. As part of the team mentioned above, I conducted a pilot study during January through April 2010 to generate preliminary data as well as to refine research questions and data collection instruments. The initial results of that pilot study were documented in the *Evaluation Project Report: OER Localization in Nepal* (Ivins, 2010) submitted to the faculty of BYU's IPT Department in April, 2010. The results of the pilot study contributed to the design and approach of this study. Additionally, I conducted fact-finding regarding OER in community centers of Nepal during doctoral field studies in 2006, 2007, 2008, and 2009; insights gleaned during these trips helped to shape the design of this study. Corresponding field reports were kept for each of these respective years and are now kept on file with the Community Development Network, an international NGO, and have also informed the research for this study.

As part of the pilot project, I designed a user survey and piloted it with 15 Nepalese students from BYU during Winter 2010. This survey was used to collect feedback regarding OER tools and localization priorities and challenges available through a particular OER portal designed for Nepal, Open Content for Development (OC4D). A set of indicators was created for conducting observations and a set of questions was developed for facilitating the focus group discussions.

Drawing from lessons learned during the pilot study, I modified the research questions and data collection instruments to better suit the needs of rural communities. The survey originally used in the pilot study was eliminated from the later study since feedback from users was that it was not effective in drawing out the various nuances related to the innumerable approaches and the innumerable contexts within the scope of Nepal.

It was decided that the primary focus of the study should emphasize the experience of the knowledge-worker and rural learner. However, results of the pilot study also confirmed that it was strategic to hold interviews and focus group discussions with Nepalese non-formal education stakeholders at every level in order to illuminate the context of these activities, including: government ministries, UN member bodies, international non-governmental organizations (INGOs), national non-governmental organizations (NGOs), and community-based organizations. Finally, feedback was gathered from participants during the pilot study and after disseminating the pilot study report and this input helped to crystallize the overall research design and to inform the selection of village sites to be included in this study.

Selection of participants. Because I have been doing work and research in Nepal for the past 11 years, I had prior connections to several stakeholders at many levels of nonformal

education in Nepal. I deemed this strategic to build from existing ties in order to help bridge the outsider-insider gap more effectively and more efficiently (Chambers, 1983). In Nepal, as in other rural community settings, social capital (e.g., relationships of trust) is the highest form of currency and is efficacious in accomplishing research tasks that involve the sharing of personal information, insights, experiences and opinions (Kahler, 2007).

For this reason, respondents were recruited for the interview using a purposive sample, based on knowledge of who was involved in the related field, which is the most common approach to small-sample qualitative studies (Henry, 1998). I then employed a snowball sampling method used to obtain research and knowledge, from extended associations, and through previous acquaintances. Snowball sampling (Goodman, 1961) was used to elicit more recommendations to find people with the specific range of experience and/or exposure to NFE, micro-learning centers, and OER. I refer to these participants as *experts* and I encouraged them to invite any other stakeholders with relevant background and experience to also join in sharing information or personal insights. I repeated this process until I was satisfied with the experts who had participated and felt that we had found the most knowledgeable individuals in this specific field.

This process is referred to metaphorically as *snowball* sampling because, as more relationships are built through mutual association, more connections can be made through those new relationships and an abundance of information can be shared and collected, much like a snowball that rolls and increases in size as it collects more snow. Snowball sampling is a useful tool for building networks and increasing the number of research participants (Goodman, 1961).

However, the success of this technique depends greatly on the initial contacts and

connections made. For this reason, I consulted several times with trusted and reputable contacts prior to going to Nepal and after arriving in Nepal before making the final selections for participants and site visits used in this study.

The primary focus of this study was on activities of knowledge-workers involved in non-formal education programming in Nepal. Since the ecology of knowledge-workers is rich and complex, representatives from every strata of the non-formal education sector were included in the data collection for the study in order to foster a better sense of the NFE cosmos and the arena where localization takes place. It was hoped that the participants selected for the interviews, focus group discussions and observations would foster deeper understanding of issues as they discussed together with other stakeholders involved in content localization activities.

Additionally, seven micro-learning centers were chosen for site visits. These centers were chosen from a pool of micro-learning centers identified by trusted individuals within implementing organizations (HLCIT, UNESCO, NITC, WVI, and TMUC). Recommendations were given for centers that met the following three criteria: (1) the center is community-based and involved in non-formal education activities; (2) the center is doing work with open content and/or OER; and (3) the knowledge-workers affiliated with the center are presumably aware of and/or involved in content localization practices for the beneficiaries of those respective centers.

At this point, I met with the recommenders to identify key features of the different centers. Since a range of centers was desired for a more robust research sample, I focused on three crude differentiating variables: (1) initial sponsor of center (to provide context of the governing philosophy); (2) distance from Kathmandu (a rudimentary indicator of ruralness); and

(3) technical/infrastructural capacity (a rough indication of services and activities available). I chose these variables based on a mix of reasons and I will now explain.

Site visit variable 1: Sponsor. I have read various reports regarding the different priorities and objectives of sponsoring organizations deploying ICT-based education initiatives in community centers. Although most centers share common elements and design, the philosophy of the sponsoring organization influences the different approaches utilized for training and governance within respective centers. I wanted a broader representation of philosophical approaches, so I chose one site from seven different sponsors. Although one site from one sponsor is not enough to represent all the differences of each implementing organization, it was hypothesized that this would allow the common learning and teaching themes between centers to surface despite differences of implementation or governance. For these reasons, I opted for a broader catchment of site sponsors instead of choosing only sites from one sponsor (e.g., HLCIT or UNESCO or TMUC).

Site visit variable 2: Ruralness. Although 80% of Nepal is considered rural (OKN, 2009), I have learned that the *degree* of ruralness substantially impacts access to services on the ground. For this reason, I hypothesized that a sample reflecting a range of ruralness would contribute to a more comprehensive picture of micro-learning centers in Nepal. This particular rubric for measuring ruralness is developed by the researcher and refers to the approximate time it would take the research team to travel from Kathmandu to the project site, including vehicle and foot travel (usually both were necessary). In Nepal, standard units for distance (e.g., kilometer) lose meaning when terrain is rugged and roads are rough or nonexistent. Depending

on whom you ask, time of distances vary. For example, what was referred to as a two-hour trek from Gorkha to Maskichaab ended up taking our team of researchers nearly four hours by foot.

Additionally, when roads are available, the most common transportation for villagers is bus. The speed of this journey depends on the kind of vehicle available: private vehicle, microbus (express—few stops), public bus (slow—many stops), or chartered bus (air-conditioned). The speed of the journey also depends on the kind of traffic. All of Nepal relies on one main paved highway, and this road is two-way and multi-use for semi-trucks, automobiles, tractors, buses, wheelbarrows, bicycles, pedestrians, and animals. Travel time is inherently hinged on the number and kind of accidents on the road.

Other variables that impacted our travel time during data collection for this research were: road barricades due to Maoist protests, road barricades due to government employee strikes, road blockages due to weather (washed out or barricaded due to rain, mudslide, or avalanche), and road barricades due to cultural celebrations (two weddings, a funeral, and a religious festival).

Site visit variable 3: Technical capacity. Each center has a different blend of physical resources (e.g., building, computer, printer, fax, phone) and human resources (e.g., trainer, facilitator, administrator). Where possible, resources were quantified and this tally was used to help sort and categorize possible choices for the sample in order to reflect a range of capacities.

Finalizing the sample. After collecting the criteria for the initial list of recommended centers, I then grouped the centers according to the three variables mentioned above. Centers were then purposely chosen in order to represent a diversified mix of several sponsors, several different geographies, and several capacity-levels. Based on this short-list, center managers were

then contacted to identify their willingness and availability to work with the research team. Seven of the ten centers contacted were willing and available at the time the research was conducted. They are included in Appendix E, Site Visit Detail.

Data Collection Activities

Training was given in Kathmandu to participating researchers and team members prior to conducting research. Members of this team included: researchers, interpreters, local literacy facilitators, and a logistics coordinator. At different times other individuals joined the team, including: government leaders, UN staff, NGO representatives, village representatives, or knowledge-workers who know the communities and cultural norms for specific places or groups.

These participants were trained on the data collection processes, interview protocol, IRB consent forms, enumerator ethics, and other capacity-building tools to empower them to support the researcher in quality data collection. Most of the members of this research team were identified prior to beginning the research while some members of the research team were identified once the research had commenced.

Three Nepalese students from BYU, who were involved in the pilot initiative during Winter 2010, traveled with the research team during our entire time on the ground in Nepal. They were strategic for triangulating data and also helping with the following tasks: conducting interviews (together with and separate from the principal investigator); providing translation, cultural broking, collecting artifacts, arranging logistical details, and note-taking during interviews, observations, and focus group discussions. Since I have been doing work in Nepal for over a decade, I have several trusted contacts from several disciplines across the continuum of NFE. These individuals also liaised with the research team in data collection. I will now

explain the data collection activities I employed in order to help themes emerge regarding OER and content localization in Nepal.

Interviews of stakeholders. The interviewing approach employed in this research draws upon both phenomenological and ethnographic traditions. I did this with the intent that drawing from the phenomenological tradition would allow insight to both the knowledge-workers' and the learners' lived experiences. This also afforded an understanding of how knowledge-workers and learners subjectively experience localization practices and resulting artifacts.

The research team interviewed knowledge-workers, learners, and other stakeholders (family members, community members, educational leaders) from seven different sites and examined the artifacts of their work. A particular focus was given to the joint construction of meaning by the interviewer and the respondent (Mishler, 1986).

Kvale's (1996) traveler metaphor refers to a postmodern constructivist understanding that involves a conversational approach to social research, thus bringing interviews into the vicinity of humanities and art. Expounding on this metaphor provides both theoretical underpinnings and practical aspects of the interview process that was utilized in this study. As *interviewer-travelers*, we wandered through the landscape and entered into conversations with the people encountered. While wandering with the locals, we researchers asked questions that led the subjects to tell their own stories of their lived world, and conversed with them in the sense of the original Latin meaning of conversation as 'wandering together with' (Kvale, 1996). What the *traveling reporters* heard and saw is reconstructed here.

Semi-structured interviews were selected as a highly appropriate method to approach this study for a number of reasons. First, the number of organizations connected to the study is

relatively small, requiring a greater depth of investigation in each case. Additionally, these research questions involve complex issues of context and intention that are generally best addressed in an interview setting (Creswell, 2003).

Interviewing techniques cross a continuum ranging from standardized and highly orchestrated exchanges to completely free-flowing and unstructured dialogues (Patton, 1980). No technique is inherently more valid than another, but some are more strategic in a specific setting, for a particular interviewee or for a tailored set of research questions. With this in mind, I designed a relatively flexible approach to my interviews with the intent of creating a free flow of ideas and to establish a *dialogic groove* (Keil and Feld, 1994).

I developed the interview protocol (Appendix A) and it was utilized throughout the interviews in order to make sure all relevant topics were discussed. This instrument served as a springboard for discussion rather than a rigid procedure. Depending on the interview, varying levels of detail were given according to the relevance of those questions and the particular dynamics of each interview. To further develop free exchange in this process, I or my research companions took detailed field notes during interviews rather than recording or transcribing verbatim, as the latter would imply a level of scrutiny and objectification that does not lend itself to open dialogue.

Respondents were free to talk about the concept of localization as much as they wanted. However, it was quickly learned that some practitioners were more comfortable *doing* things instead of *discussing* things. For this reason, I provided each respondent a copy of a draft for a Nepali literacy manual titled, *How to Start and Grow Your Own Business*. This manual was the first draft of the localized Nepalese manual (modified from an original English version). Each

respondent was invited to comment on the existing localization (what worked and what didn't) as well as to provide suggestions as to how they would improve, expand, or alter the localization for this manual. This technique tended to open up conversation and to remove the focus away from discussing the practitioner's own abilities in order for the practitioner to actually demonstrate and discuss some strategies of localization.

Building from my initial purposive sample, I recruited individuals from organizations known to be working on NFE programs that involve ICT and OER. Additional respondents were added through a snowball sampling effect, of whom many were recruited after discussing localization during the focus group discussions (Appendix D). In total, 33 individuals from 16 organizations were eventually interviewed in May 2010 (see Appendix B for more information on respondents and organizations).

When possible, English was used to conduct the interviews if it was the respondent's language of preference (as is often the case among educated stakeholders of the development community). In other instances, Nepali was used for the interview at the request of the respondents. The context of the interviews varied greatly. Some were conducted in the offices of government leaders, NGOs and other development organizations in the urban capital of Kathmandu. Interviews conducted during site visits were held primarily at the micro-learning center or else in the community context of the knowledge-worker or learner. The length of interviews was anywhere from ten minutes to three hours. As noted in the interview protocol, two key question areas were covered and, depending on developments in the interview, certain sub-questions were chosen to draw out more detail relevant to the respondent's experience.

At the completion of all interviews, field notes were translated (when necessary) and

copied into a computer file suitable for analysis for qualitative data analysis software. Further details on analysis procedures are described below.

Artifact reviews. During the course of interviews, focus group discussions, and site visit observations, participants were invited to share any artifacts related to content localization and practices related to OER. These artifacts included learning objects, manuals, pamphlets, posters, curricula, teaching materials, lesson plans, reports and anything else that supports learning inside of a micro-learning center.

The researchers observed these artifacts, asked questions, took notes, and, in some cases took pictures and/or photocopies of these artifacts. An example of such artifacts can be seen in Appendix C, Artifact Examples.

Focus group discussions. NFE practitioners were invited to a centralized location in Kathmandu to participate in a focus group discussion (FGD) regarding localization of content in micro-learning centers. As indicated in Appendix D, there were 38 participants from 22 different organizations who came to Focus Group Discussion I. Some of the gathering took place as a whole group, with one facilitator leading the large focus discussion in the front of the room. During this time, the four other researchers recorded notes and the lead facilitator wrote feedback on newsprint at the front of the room to promote participation as well as to verify responses.

The majority of the time during this gathering was spent in smaller focus-group discussions. The large group was divided into seven sub-groups that were facilitated by interviewers from the research team. Including the researcher assigned to each group, there were three groups with six participants and four groups with five participants.

Similar to the strategy used in the interview process, I supplemented the focus group discussion by discussing a draft for a Nepali literacy manual titled, *How to Start and Grow Your Own Business* (see Appendix C). This manual was the result of the first Nepalese version of localization from an original English version. Each respondent was invited to comment on the existing localization (what they felt worked and what didn't) as well as to provide suggestions as to how they would improve, expand, or alter the localization for this manual. This technique tended to open up conversation and to remove the focus from philosophizing on localization in order that the practitioners could actually demonstrate and discuss some strategies.

After discussing key themes, a representative from the small group would present their group's highlights on newsprint in front of the entire large group. After each group presented, a large-group discussion would take place regarding the particular details shared by each respective group in order to flesh out any additional ideas, counterpoints, or complimentary insights to corroborate theories or strategies regarding current practices used to access, localize, and disseminate critical content for those whom they serve.

The second Focus Group Discussion, FGD II, took place at the government offices of the High Level Commission for Information Technology (HLCIT). Invitees represented a different tier of stakeholders in contrast to FGD I. These individuals were mostly government leaders, NGO representatives, program officers, and other high-level professionals involved in NFE policy, executive, or programmatic positions.

As indicated in Appendix D, this focus group discussion included 14 participants from 8 different organizations. The format for the discussion was more formal than FGD I, being conducted at a round table with the Vice-Chair of HLCIT facilitating the discussion in tandem

with the author.

These two focus group discussions served four purposes: (1) to learn current trends of content localization used by knowledge-workers; (2) to discuss challenges related to content localization; (3) to identify strategies for building capacity in order to improve content localization; and (4) to provide a forum whereby Nepalese knowledge-workers and related stakeholders could foster and/or strengthen a community of practice for idea-sharing in this arena.

At the conclusion of these FGDs, all participants were invited to send emails to the researchers with any additional input, artifacts, or opinions regarding content localization and/or other issues that surfaced during the discussions. The author continued correspondence with six respondents who contacted her through email.

Site visit observations. The researcher visited seven micro-learning centers in order to observe practices on the ground and to meet with knowledge-workers and beneficiaries in their own environment. The researcher visited these centers together with other members of the research team. Full detail of all seven sites is given in Appendix E. The protocol used in each site visit is given in Appendix F, Site Visit Observation Protocol.

Orientation was given to community leaders and center managers regarding the research project. Knowledge-workers and community people were then invited to join in a discussion regarding content localization after signing a release form. Interviews were conducted on site in both individual and group settings, depending on the circumstances.

Appendix E shows the seven sites that were visited and the corresponding sponsor of the site (organization who initialized/funded the site). The degree of ruralness is also represented

(indicated by the distance from Kathmandu) to partially indicate the context for which content localization activities take place. The infrastructural/technical capacity of the site is also given according to respective indicators (number of computers, electricity, Internet, number of trainers). In Appendix G, photos are given of the sites visited and relevant images regarding geography and context of data collection and research participants.

Research team debriefings. After collecting data in villages through interviews, focus group discussions, and observations, the research team held a nightly debriefing session. This provided synthesis of experiences and also provided opportunity for data triangulation. Notes taken during these meetings were added to the notes taken during interviews, FGDs, and site observations.

Additionally, a final research team debriefing was held in Kathmandu at the end of all data collection activities and any final notes and artifacts were collected during this time. This provided an opportunity for members of the research team to share their overall insights and experiences regarding the research activities and to synthesize thoughts in a rough outline of key themes, patterns and trends. This gathering complemented the author's own synthesis of experiences and provided a rough (though not exhaustive) road map for data analysis.

These discussions were helpful in clarifying data while it was fresh as well as identifying important tangents or avenues that should be considered in future data collection. These debriefing sessions also provided opportunities for researchers to continuously revisit the data and begin writing up findings early on and throughout the data collection events. In a sense, these meetings provided the opportunity for the researchers to interview the researchers and to create a genealogy of shared experience within the research team.

Data Analysis

This study similarly employs a blend of qualitative analysis strategies used by prominent hermeneutic, phenomenological, and ethnographic social science theorists (e.g., Kvale, 1996; Packer, 1985; Spradley, 1979; vanManen, 1990). This study also draws from the research of South (2008), led by Dr. Stephen Yanchar, with regard to the unique blend of theories which laid the groundwork for this study and impacted the way that data were collected, analyzed, and interpreted. The main objective of the data analysis was to identify key patterns and themes supported by a rich description of key strategies, beliefs, and practices regarding content localization.

In this blend of approaches, hermeneutic aspects of analysis included particular attention to themes related to the participants' practical involvement of identifying learner needs and then customizing content appropriately. Phenomenological aspects included an emphasis on seeking out narratives of participants' experience and using these as a basis for analysis and reporting. Ethnographic aspects included development of a thick description of participant's responses so that each reader can draw personal conclusions from the data presented.

Dr. Yanchar helped to draw up these similar research traditions into a coherent whole. The main emphasis is:

> The process of creating a tentative interpretation of the whole, investigating and characterizing the parts in relation to the researcher's understanding of the whole, discovering in that process new insights and contradictions, applying this new understanding to the interpretation of the whole, and repeating this process until the meaning of the whole matches the evidence of the parts in a coherent way (South, 2008, p. 36).

I also followed the seven steps of analysis given by Dr. Yanchar (South, 2008, p. 37):

1) Holistic Reading: I reviewed all field notes, memos, and transcripts for a general sense of the whole.

2) Meaning Condensation: I condensed text by identifying "meaning units" or categories of activity and experience in line with the purpose of the study.

3) Thematization: I created categories based on the "meaning units" and identified key quotes or examples that clarified the meaning of themes. These themes are summative, not conclusive, and highlight the key experiences and practical involvements of the knowledge-workers.

4) Inter-Theme Exploration: I looked for connective and divergent threads by comparing and contrasting themes.

5) Thematic Amplification: Considering what I understand about the "whole," how do I interpret individual themes (or meta-themes)? What other insights come during this process?

6) Holistic Amplification: Based on what I understand from the individual themes, what do I now understand about the whole? What other insights come during this process? (All steps are given synonymous interplay, particularly step 5 and step 6.)

7) Coherence Assessment: Are these results more or less coherent? Are contradictions in accounts discussed and blended into a meaningful conclusion? Is there a coherent story about localization of content in Nepal?

Data coding, memoing, and sorting. Based on the research questions, a number of codes were developed beforehand (e.g., *strategy* and *challenge*) and others were developed during analysis (e.g., *political* and *donor driven demands*), which are taken from the language of

the respondents themselves (Strauss & Corbin, 1998). Once coded, the data were analyzed using model-building techniques that involve finding links, references, and patterns in the data (Richards, 2005).

These codes were then grouped into similar concepts to make them workable. Based on these emerging concepts, categories were then formed. These categories helped in drawing out the key themes and dominant patterns related to content localization and OER in micro-learning centers of Nepal. This contradicts the traditional model of research, where the researcher chooses a theoretical framework, and only then applies this model to the studied phenomenon (Allan, 2003).

In the beginning of this study, everything was coded in order to find out about the key strategies and key problems and other main concerns of stakeholders. The coding was often done during debriefing sessions and labeled in the margins of field notes. These notes were compared when coding more data; dominant ideas merged into new concepts; and, finally, certain themes were renamed and modified. Selective coding was done after finding the core variable or what was thought to be the tentative core. This core impacted how future coding was done and most data was then labeled according to these key codes or to sub-codes of that core.

I utilized memos as an important tool to track my evolution of ideas during personal and group debriefing sessions. Long journeys between village sites provided important time to process these ideas and the memos jotted down during these pensive sessions provided great fodder for nightly debriefing sessions and for the coding process. After this, I engaged in sorting of codes and themes. This was helpful in synthesizing thoughts in preparation for the writing

phase. Finally, these written notes became the draft wherein I incorporated scholarly literature and created the final paper.

Interpreting meaning in data. I approached meaning-making of the data using hermeneutic strategies of inquiry that included not only the written text, but also everything in the interpretative process (Ferguson et.al., 1988). This included verbal and nonverbal forms of communication as well as other aspects of communication that transpired before conducting the interviews, focus group discussions and observations. Some of those earlier facets that affected discussion with stakeholders include presuppositions and pre-understandings, the meaning and interpretation of language, and semiotics (Ferguson et al., 1988). Much of the interpretation of data occurred through the translation process. Although interpreters were told to provide word-for-word translation as much as possible, many terms are contextual and meaning only surfaced in concepts and summaries of ideas shared.

Establishing trustworthiness. The author recognizes that no two qualitative studies of this kind would ever be conducted in the exact same way and, even when presented with the same data, no two researchers would reach the exact same conclusions (Rogers, 2006; Goulding, 2002). For this reason, it is important to establish trustworthiness of the data and the data analysis. I employed the rubric proposed by David Williams (2008) in order to evaluate and establish trustworthiness of data collection, interpretation, and presentation.

Williams (2008) argues that trustworthiness is integral to evaluate the worth of a research study. Lincoln and Guba (1985) explain trustworthiness involves establishing: (1) credibility - confidence in the *truth* of the findings; (2) transferability - showing that the findings have applicability in other contexts; (3) dependability - showing that the findings are consistent and

could be repeated; and (4) confirmability - a degree of neutrality or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest.

Drawing from Dr. David William's online book (2008), *Educators as Inquirers: Using Qualitative Inquiry*, I utilized the checklist for assessing each one of these areas of trustworthiness as delineated by Lincoln and Guba (1985). I attempted to increase transferability of this research through thick, rich description of the data and conclusions so that the readers can make a decision about whether their own contexts are similar enough to those described in the study to extend the conclusions to their settings. In order to increase dependability of the data, I have allowed for an inquiry audit by maintaining a research journal of thoughts, actions, methods, epiphanies, memos, coding structures, and files. This journal is kept on file by the author for anyone who is interested. I attempted to establish confirmability by corresponding with other stakeholders who are involved in this research. During the two focus group discussions held in Kathmandu, I shared my preliminary findings and key themes in order to verify ideas and/or redirect where necessary.

In order to establish credibility, I employed several trustworthiness strategies: (1) *progressive subjectivity checks*—by recording evolving impressions and biases in field notes and memos and through nightly debriefing sessions with the research team; (2) *negative case analysis*—involving several members of the research team to record notes of the same interview and in focus group discussions to see that there were no misunderstandings or misrepresentation of data; (3) *triangulation*—by checking information gained through interviews with government reports, NGO reports, and third-party evaluations and/or project reports; by working with multiple researchers on the research team; and by involving interviewees in the focus group

discussions as much as possible so as to revisit and deepen insights; and by holding multiple interviews with the same people to allow new and old insights to surface; (4) *peer debriefing*— by debriefing with the other members of the research team to verify that the data collected had not been misrepresented and to crosscheck preliminary findings with other stakeholders to verify that the emerging themes appeared accurate and in line with other data related to this subject; (5) *maintaining an audit trail*—by tracking notes and impressions through field notes, memos, transcriptions of interviews and focus group discussions; (6) *member checking*—by sending the quotes used in this dissertation through email back to respondents to whom they were attributed; by allowing respondents to verify and edit these quotes order to ensure that they were not misrepresented (in the case of rural villagers, interview data was sent to a representative from the respective community leader and they were asked to verify data); (7) *dependability audits*—by having my own notes and initial formulation of ideas for writing up the data reviewed by my Committee Chair and by a third-party reviewer at various points of the writing stage to verify that I was selecting the most salient and relevant part of the research; and, finally, (8) *confirmability audits*—to tether ideas and concepts formulated from the data analysis back to the scholarly literature related to OER, non-formal education, and rural development.

By combining multiple observers, theories, methods, and empirical materials, I have attempted to overcome the weakness or intrinsic biases and the problems that come from single method, single-observer and single-theory studies (Lincoln & Guba, 1985). As mentioned above, I triangulated data through the application and combination of several research methodologies in the study of the same phenomenon (South, 2008, Cohen & Manion, 1986). I conducted interviews at different points in time, in public and private settings, and I compared

accounts of events with different viewpoints. I utilized multiple observers (at least one other person in each interaction and sometimes up to four including myself) in order to provide a check on selective perception and to illuminate blind spots in an interpretive analysis (Cohen & Manion, 1986).

Most of this cross-checking took place during our nightly debriefing sessions with the research team and through comparison of field notes. The audit trail includes all field notes, memos, and other writings and these are all marked with the patterns and themes that were identified at the time and since. This allowed for me and for our research team to establish credibility in the conclusions drawn during and after the data were collected.

In summary, the data triangulation methods utilized in this study establish trustworthiness because they have enabled understanding of multiple ways to see the data collected in focus group discussions and interviews through a "method of cross-checking data from multiple sources to search for regularities in the research data" (Denzin, 2006). Any irregularities were examined in greater detail and have been recorded in the next chapter.

Limitations of the Study

There are several dimensions of this research that limit this particular study. I have given details in the researcher background section above that show the biases and context in which I conduct this study. This particular background both enriches and limits the investigation. Although this is a central limitation of this research study, there are other limitations that must also be noted.

This study is limited in generalizability due to the nature of this kind of qualitative study that involves a small sample of centers and a small number of respondents. This kind of study

offers *extrapolations* which speculate on the "likely applicability of findings to other situations under similar, but not identical, conditions" (Patton, 2002, p. 584).

Also, since this is a cross-cultural study, the study is limited by interpretation that occurred through the translation process. Although many of the respondents in more urban areas or from highly-educated or professional backgrounds were able to communicate in English, this is still a barrier to understanding one's thoughts which are most naturally spoken in the fluency and freedom of one's own tongue. The burden on interpreters was not just to broker language, but to also broker culture and contextual meaning. This further reduces communication and limits understanding of the speaker's original intent.

It would have been ideal to experience prolonged engagement in each of the sites visited together with the research team. However, Nepalese culture requires that guests be treated with a high degree of respect, including slaughtering and cooking animals and even foregoing their own meals when necessary in order to feed a guest well. Because the communities that we visited were poor and resource-strapped, the research team did not want to be a burden on them and it was recommended by the sponsor organizations (who often accompanied our research team) that it would be less burdensome if our research team were to stay for shorter periods of time—meaning a day or maybe two days at most in each village.

This kind of research study is formative and only contributes to the foundation of such research in the field of OER and content localization. This study does not claim to be summative regarding content localization in Nepal or anywhere else. Instead, it is hoped that this research is a catalyst for many more similar studies. This study is also limited by the availability and willingness of the respondents who were able to participate. More data could have been gathered

in the collection, synthesis, and final presentation under fewer time constraints and logistical settings. Last but not least, this study occurs on a timeline of many rapidly changing realities in 21st century Nepal and, as such, the results of this study occur on the "landscape of a changing global society" (Rogers, 2008, p. 47). Like the data contained therein, this research study is best understood when situated within the timeframe during and context by which it was conducted.

Ethical Implications

Ethics are a significant part of all social research studies since they address complex issues of humanity, distribution of resources and quality of life. Creswell (2003) contends that research ethics begin when a researcher chooses a particular research topic that stands to harm or benefit individuals who are studied. This study aimed to maximize benefits to the respondents by involving local stakeholders and community members in the research process and by disseminating research findings in multiple formats that can be easily understood.

The crux of this study is focused at understanding how open educational resources (OER), become localized for the needs of Himalayan villagers in order to support individual problem-solving and community empowerment. One definition of *empowerment* is given as a process through which communities "gain control over issues and problems that concern [local people] most" (Kar, Pascual, & Chickering, 1999). Thus, the ethical implications of this study are tied to an understanding of whether, on one hand, localized OER improve quality of education and thereby enable communities to gain a greater level of agency and control. Or, on the other hand, this study may corroborate, like other research studies, that "knowledgeable rural people are disregarded… by urban, commercial and professional values, interests and power" (Chambers, 1983, p. 101) in the form of educational resources that are out of reach for local

people's needs and ability levels.

Implementation of these research methods were approved by and conformed to the standards described by the Institutional Research Board (IRB) at Brigham Young University (BYU). These standards include posing minimal or no risk to the research participants, offering respondents the right to withdraw, preserving the anonymity of participants, and clearly stating the research purpose and procedures.

Method Summary

Complex issues of representation in contemporary social sciences demand a clearly defined methodology. This research is anchored in hermeneutic inquiry and is augmented by interpretive phenomenological and ethnographic research tools. The research employs hermeneutic inquiry in that it is focused on studying and interpreting human behavior and social institutions through analysis of tools, artifacts and people (Kvale, 1996; Packer, 1985). A interpretive phenomenological approach is utilized in the sense that meaning is co-constructed between the researchers and the respondents in the study. Furthermore, this research draws unique interpretations and conclusions of experiences based on my own context and the *parts* of the data collected are interpreted in terms of the *whole* discourse and vice-versa; these *parts* also lead me to the *whole* conclusions drawn at the end of the study (Spinelli, 1989). This research is quasi-ethnographic in that it draws primarily on narratives from practitioners who were interviewed and observed in their own communities or workplace settings and data has been presented in context as much as possible (e.g., situating data within its many layers of context).

This study does not purport objectivity in its methods, but rather acknowledges that it is situated within a cultural context that naturally carries implicit and explicit epistemological

biases. The research questions were addressed through a qualitative approach that combines semi-structured interviews, focus group discussions, site observations and artifact reviews. All research activities were conducted together with Nepalese researchers who aided in providing cultural sensitization, language translation and contextualization for both the research subjects and the researchers. Ethical considerations were addressed in accordance with established best practices in the field of educational research and the methods were certified by the author's doctoral committee and by BYU's Institutional Review Board.

CHAPTER 4: RESULTS

The research design for this study provided a rich data set. Many interesting themes arose during the analysis and certain guiding principles were used to decide where to place emphasis. I initially grouped data according to the order in which the research questions were asked. Next, I sorted the data according to common codes and then according to key themes. Finally, I grouped themes together that appeared to best answer the research questions and focused on those. In the event that some data collected through one research question better answered another research question, I regrouped those data and sometimes renamed codes or joined themes when necessary.

Overview

Findings of this study are presented here in three main categories: (1) knowledge-workers' lived experiences and practices for localizing content; (2) the extent to which knowledge-workers feel that they are localizing content (based on their own definitions of localization); and, (2) strategies to overcome obstacles in the way of content localization. It is important to also note that during the course of this research study the term *content* referred to many types of information, including (but not limited to): local issues, global issues, questions, answers, local notices, market prices, complaints, events, for sale/trade, government announcements, international news, jobs, knowledge, market prices, messages, health practices, agricultural practices, suggestions, wanted items, and weather.

Beyond this, content was often categorized into two forms: *push content* and *pull content* (OKN, 2010). Since there are important distinctions between these two kinds of localized content, I will explain this in greater detail.

Push content is defined as content delivered top-down from a source exterior to the local community (e.g., government, NGO, regional office etc.). In contrast, *pull content* refers to bottom-up content derived from processes of collecting or generating content from local grassroots communities (e.g., by using participatory rural appraisal, PRA, activities) and delivering this content to access points (AP). Knowledge-workers, then, are any of the people who actively participate in Push and Pull Content activities. A content-manager is a technical person who handles the mechanism of Pull and Push Content by the help of knowledge-workers.

Most of the quotes reported in this research were originally given in Nepali. Interviews and FGD responses were translated by the Nepalese interpreters and, in the case that a native dialect was used, there was a native person fluent in the dialect who then translated into Nepali and then into English. In some cases, respondents preferred to speak in English and, in other cases, people used a hybrid of English and Nepali. Responses are given in this dissertation in a narrative format. Where possible, the actual words used by the respondent are given and the original translation into English is given. In some cases, the words given by the respondent and the interpreter were modified slightly to help improve understanding; I have noted those changes in brackets. Whenever possible, I have submitted the quotes utilized in this dissertation back to the stakeholders in order to verify accuracy of statements and overall meaning. The changes noted by respondents have been amended and/or appended and occur here according to their final form. As noted in the Method Section, there are limitations in language, translation, transcription and presentation. The main goal of this dissertation is to present the concepts and ideas of respondents as accurately and honestly as possible.

Question 1. How do Himalayan knowledge-workers *localize* content in community technology centers of Nepal?

 In answer to *how* knowledge-workers localize, I will present the first two meta-themes: (1) localization practices of knowledge-workers; and (2) localized content outlets. Although there is overlap in all these areas, I have attempted to separate the concepts in order to more fully answer the research question and to illuminate key aspects the many layers of content localization.

Meta-Theme 1: Content localization practices. During the process of reviewing the data collected, eight main themes emerged regarding the ways that knowledge-workers localize content for micro-learning centers in Nepal. All of these practices have their own strengths and weaknesses. A mix of strategies is usually employed in every center by every knowledge-worker.

Theme 1.1 Determine learner abilities and needs. One of the first steps faced by practitioners who engage in customizing content is to determine the ability level and the needs of the learners with whom they are working. According to Tuladhar, from Ward 18: "We must first meet the learners at the place where they are." Several other respondents corroborated this point.

> RAMITA: We had to identify [the learners'] ability level first. We also must seek to understand their interests before we start teaching them. Some people only have interest to write emails to loved ones overseas, but others have interest to manage household finances or to search for crop prices or job vacancies in Kathmandu. We must first find out the learner's objectives and goals, then we write this down and it is a kind of curriculum for each learner. Then we find ways that we can help them.

After determining learner needs, many knowledge-workers draft a mini curriculum for each learner. This becomes the template for finding content. Other ways of determining learner

abilities is through group discussions. By using key codes in literacy classes, current issues and

problems endemic to the learners will surface. These issues get written down or placed in a

parking lot whereby the knowledge-worker may return to them down the road and hold a lesson

on the particular topic of interest after having prepared learning materials for that topic.

> **Theme 1.2 Collect content from locals.** A good way to get localized content is to draw it

out from the locals themselves. Sometimes referred to as *pull content*, this kind of content is

knowledge that is shared by locals regarding their own experiences in the community. One

stakeholder, Sita Adhikari, spoke about READ Nepal's successful efforts collecting content at

the Jhuwani Community Library by interviewing community members. Interviewers who took

hand-written notes recorded some content; other content was captured through audio recordings

with mobile devices; and some content was captured by videoing locals with digital cameras.

> SITA: First, [the knowledge-workers] collect the local content from the local people.
> Local people give content according to their own experiences in the community. Most of
> the content focuses on primary health, herbal medicine, farming, local organizations and
> other local programs.

In Sankhu, Ramita, Sunila and David were involved in collecting pull content from

audios files. Much of what they collected initially was audio recordings of interviews held with

elders or local experts. These files were then transcribed into text and made available in print

format in both Newari (the indigenous language) and in Nepali (the national language).

> RAMITA: Once the community knows that we are providing localized content according
> to their interests, and then they have trust in us. After we did this, we found that they
> would say, 'Oh, I also have something good [to contribute] and they will share content to
> the center so that we can share it with other people in our village. This really is the
> community part of our community center.

Theme 1.3 Translate content into local vernacular. Another important step is customizing content according to local languages, native dialects and local vernacular. Customizing content in this way is not bound exclusively to the formal language used in an area; the best localization projects use the words the locals use (Pandey, 2010). Some may label this kind of language as slang, but in this context it does not have a negative connotation. Its use implies that the user is familiar with whatever is referred to, or with a group of people who are familiar with it and use that term (Zuckerman, 2003).

> RAMITA: We localize by using words that people know. Housewives use different words than merchants. People who have gotten some formal schooling or who have left the village for work have different words that we can work from. But, for local villagers who have never before seen a computer, we must use the right words to help them feel comfortable.

It's been agreed that a salient ingredient of localization is to specify the needs of groups. And, in Nepal, there are 103 ethnic groups and 92 languages. Differences in each of these languages are also reflected in the nuances of their different cultures. This concept is at the core of what makes translation of a text from one language to another often times difficult and content localization so laborious for knowledge-workers at every level—from the professional government minister to the grassroots practitioner (CAL, 2010).

Words can have deep meaning, and for knowledge-workers to find the right word for the right context can be an interesting and formidable challenge. Being a native speaker of our mother tongue brings with it more than just the ability to communicate, it brings with it the ability to understand why someone thinks and acts as they do and the values that permeate all activities of their daily lives.

Theme 1.4 Incorporate write-in and verbal requests for content. "The success of our center depends on how we meet people's needs," Sunila explained. In order to know what people need, knowledge workers create mechanisms for villagers to request certain topics and themes.

To accommodate those who are not literate, knowledge-workers often visit more remote villages and take inventory of interests, needs, and local issues. Then, these knowledge workers respond to those requests for content on behalf of the very rural people. Some centers have created a box with suggestions whereby local villagers can suggest ideas for the wall newspaper, a text-based notice board updated daily with important content related to local people and/or local issues. (More details will be given about the wall newspaper below.) Other requests for content are collected while learners participate in a class, training or workshop and the facilitator takes note of learner interests and commits to finding out more information.

Copies of the wall newspaper, print-outs, and audio recordings are disseminated in the community center or by *village ambassadors* from that village and, for those who can't read, content is often read out-loud to those with interest in the various topics. In some centers, existing literacy classes, community workshops, and training courses were the medium for sharing localized content. Throughout this process, feedback loops are essential in order that knowledge-workers could know how well they were meeting the needs of locals and how to do their job better.

Theme 1.5 Search the Internet for a content match. For the centers that have access to the Internet either in their own center or nearby their center, knowledge-workers utilize it as a means of finding information that was desired but unknown by the knowledge-worker. Some

websites in Nepali are available to help knowledge-workers access information.   For example, a volunteer group of engineers, the Free and Open Source Software (FOSS) Nepal Community, have worked on building an online repository of content resources.   One website is dedicated to helping students pass the SLC (School Leaving Certificate).   Some knowledge-workers browsed the Internet to find supporting documents containing useful mathematical, scientific and historical data.

Another website is focused on tele-medicine and rural health.   A partnership has been formed for advancing contextual medical knowledge together with all South Asian Association for Regional Cooperation (SAARC) countries (*Times of India*, 2011).

> RAMITA: If people come seeking information that we don't know, we usually will do a Google search to try to find new information. This is when we have an Internet connection working. Nowadays there is load-shedding [brown outs] all the time. When we have Internet, our center is very busy. People like to search online if they can. Otherwise, they ask us to help them. This helps, but, there are still problems [with online searching] because we don't know the goodness of that information - for example, what kind of quality is the information that we've found and there is so much there, so we don't know which is the better resource.

Theme 1.6 Refer to student textbooks.   Many centers have become gathering places for youth after school.   In order to differentiate themselves from cyber-cafes (where gaming and gambling takes place), some centers have amplified a focus on group homework sessions. Through the help of a knowledge-worker, some youth have been able to learn from one another's textbooks.   Even though the content may be more advanced than the other learner's grade-level, knowledge-workers have been able to help verify content and to package information according to the ability of the learner.   L.P. Mali, a knowledge-worker in Sankhu, shares his experience of working with the Community Youth Club (CYC) along these lines.

L.P. MALI: We have found great success with our telecenter when we have created the opportunity for the local youth to do homework here. Student textbooks can be a resource to more people than just students. There are not many reading materials available in our village, so we invite youth to also share knowledge by bringing their textbooks to the community center so that we can search for important ideas and key topics that make sense to other people's questions in the community.

Theme 1.7 Verify content with local experts.   Social structures carry great weight in village life of rural Himalayan communities. Although youth are the primary leaders of the micro-learning centers across Nepal, youth do not have the experience or the social capital to speak, let alone teach, about certain topics.

Some of the ways that content became localized was through endorsement by local leaders. Certain interaction programs were organized with local or native experts, particularly on topics of health, government and business. In the wake of political upheaval, a local government leader spoke in one center about the Election of the Constitutional Assembly; the Police Chief was welcomed in another center where he spoke to villagers (especially youth) about the dangers of drugs and the legal implications therein; a doctor from Kathmandu came to speak about cataracts; a female Member of Parliament came to speak about women's rights and gender equality. Because HIV/AIDS is such a sensitive issue, youth had a health expert first talk with a respected elder in the community and then they presented in tandem to those who had gathered at the community center.

One story was told of a farmer who was able to receive critical content regarding a disease on his cow's udder. After visiting the access point, the youth managers contacted an expert (another farmer) and they learned that he could boil the locally available Asuro Grass and apply it to the animal's infected area. This cured the animal and saved the farmer a high expense

or loss. This knowledge was then written up digitally to become shareable content uploaded to a central repository of content. Now that local knowledge can benefit other farmers across Nepal.

In some cases, today's beneficiaries become tomorrow's experts and continue teaching new participants. Sunila, a youth manager in Sankhu, told her story:

> SUNILA: When I first came to this center, I did not know anything about how to use the computer or to do things on the Internet. Ramita trained me how I could find information and how I could use websites and communicate more easily using email. Since one year after I joined this center, I have been a trainer and now I have the great joy of sharing knowledge with others who come to our Sankhu center. Ramita has helped us all to see how information technology can be a help to solve our local issues. Yes, I can continue coming here even though I am now married and living at the home of my husband's family. I am now helping his family and relatives to understand the importance of knowledge and the skills that can help to improve their lives.

Another content area that is usually benefited by involving experts is business. Tuladhar from Ward 18 CLC explained:

> TULADHAR: We have been providing training and mentoring to help youth build marketable skills, as well as helping them find out who they are and what their duty is. We knew that our facilitators did not have the knowledge to teach in this content area. So, we contacted some well-respected business people to help us identify the important teaching tools for this training. Local experts are essential in this kind of training because they know the realities of Nepal and they can teach in a good way so people listen to them.

In Nepal, the word *expert* is synonymous with the word *elder*. Falk and Kilpatrick (2000) contend: "any notion of learning presupposes interactions between the social actors themselves and the contextual tools they employ" (Falk & Kilpatrick, 2000). For this reason, learning in a village of Nepal is still tethered to the ways of the past.

There are many reasons why the elders hold such weight with regard to knowledge-sharing. Deloria (2001) explains one possible explanation: "Education in the traditional setting occurs by example and not as a process of indoctrination. That is to say, elders are the best

living examples of what the end product of education and life experiences should be (Deloria, 2000, p. 45). For these reasons, verifying content with elders has proven an effective way to increase interest in micro-learning centers.

Theme 1.8 Embed content within the learner's profession. One of the basic ways that knowledge-workers localize content is by situating it within the learner's lived experience. This is to say that *new* content is usually received better when it is tethered to *old* principles or concepts that learners already respect or hold true. This means that a possible starting point for a farmer is a field. Some knowledge-workers took digital photos of the actual fields where learners worked. These photos are printed and incorporated with more generic content that they can find online or in other government-distributed educational resources. Inviting learners to share what they know through their profession and their daily activities in the community allows knowledge-workers to use this as a springboard for exploring new topics.

> RAMITA: We have done different localization strategies for different people. What we have done for domestic housewives is different than what we do for the merchants. They may be from the same community, but they spend their daily lives doing different things. This is why, in our village, it is usually better to have women's groups meet separately from men's groups. In Sankhu, most women are working in the rice fields and caring for the children, while men care for the cattle and do other things to make income.

Theme 1.9 Search local Nepalese national archives for content. Since 2007, Madan Puraskar Pustakalaya (MPP) has been building a digital and physical archive of books, periodicals, and ephemera, including many other collections in the Nepali language. Although accessing this archive is not slated to have optimal use until June of 2011, it is a vehicle whereby Nepalese knowledge-workers can access native-tongue and Nepali-based texts for teaching and informing communities.

This project contains manuscripts, photographs, audio-visual materials and other artifacts of national, historical and cultural significance. A non-profit library & archive, MPP is committed to use its holdings to promote research, and spread knowledge on Nepal through publications, exhibitions and outreach to share content in a Nepali format through an online website or through distribution of content on CD-Rom (MPP, 2010).

Meta-Theme 2: Outlets for sharing localized content. Certain localization strategies impact the various outlets used for disseminating that content and vice-versa. In general, the knowledge-workers operated within existing systems to distribute content. In some cases, old systems were used in new ways. In other cases, entirely new mediums of distribution were utilized. There are 12 key themes that emerged while exploring the outlets used for disseminating localized content.

Theme 2.1 Wall newspapers. Micro learning centers often utilize a notice board or a posting board that they place on the wall of their center. These wall newspapers are affordable and are an effective low-tech way to share knowledge with many members of the community. These wall newspapers are either printed (when printers are available) or hand-written and contain information about relevant topics for the majority of villagers, including, but not limited to: crop-prices, weather, job vacancies, community events, exchange of services and government updates.

> KRISHNA: Some rural telecenters are printing the wall newspaper in Nepali languages and fixing the paper and pamphlets on the notice board of their village. The content in these papers is regarding the change in harvesting season and rainy reasons because of climate change … [the wall newspapers] are used in order to aware farmers when to harvest their crops and make effective decisions before drought comes on their door. This is an important [piece of] information required for the farmers.

The wall newspapers have both strengths and weaknesses. Sita explains the situation at the Jhuwani Community Library.

> SITA: The wall newspaper provides space for community people to express their feelings and experiences on any subject, especially practical matters. In the past, these have included bee-keeping skills and difficulties while searching for the appropriate market to sell their honey. However, print media can bring challenges. Distributing knowledge through print media is always challenging in Nepal. More than 50% of the people are non-literate in Nepal. If we only rely on print media knowledge and information, we cannot reach everyone. For this reason, other forms of media content have the potential to be very popular for sharing local and wider knowledge.

Theme 2.2 Audio and video files. Because many villagers are still not literate in most communities, knowledge-workers have often used Internet-based information (e.g., weather reports and health remedies) that can be downloaded as video or audio files. These have then been played on loudspeakers in front of the center (if the audio is in Nepali), or on a computer screen inside the center (if they are visual media). This has provided customized content at a low-cost to villagers at well-attended gathering held after villagers have returned from their day's work in the rice fields.

Another example of audio resources is through digital story telling (DST) where locals used digital cameras to video people's stories. These digital stories are then put on computers or shared through digital audio players and speakers in more remote settings to teach important lessons on relevant topics (Martin et.al., 2007). Sita discussed the impact of digital stories:

> SITA: One digital story that was told is about how a local woman in our community was able to save her life because she accessed important information about the danger of a certain plant. She didn't know that plant was, but she had heard it could kill her. She was able to use a local community center to find out the truths of this plant. The story was important because it helps people know that local centers can help people to access knowledge. Her story was recorded by knowledge-workers on a digital camera. The use of digital stories blurs the divide between those who can read and those who cannot read. In the past, many villagers have felt excluded because of their illiteracy. Now, they have an opportunity to join in. This also helps them believe that they can gain literacy too.

Theme 2.3 Community radio broadcasts. One network for sharing localized content is facilitating connections between Nepal's FM stations. FM radios outside the Kathmandu Valley now use the Internet, and wireless and other new media technology, to share six hours a week of audio software produced from a central hub. UNESCO supported the pilot of the Community Multimedia Center (CMC) initiative in three rural areas. Each of these sites found great community interest in local radio.

One site of community radio is the village of Manigram in Far Western Nepal, about 300 kilometers by road from Kathmandu. Radio Lumbini had its first broadcast in 2000. It was the first community radio to be launched outside of the capital Kathmandu and the first to be totally managed by a cooperative (Martin et al., 2007, pp. 6-7). Deepak Koirala spoke about his work as a marketing officer for Radio Lumbini:

> DEEPAK: It is interesting for me to work with members of the community who are illiterate or just beginning to be literate. The cooperative identified community multimedia and, the combination of existing radio and new ICT applications, as a way to expand local access to information resources. They soon realized that these knowledge-workers are the mediators of global knowledge networks for local listeners, and they were able to lay the foundation of ICT skills among local youth. A strategy they use is that program producers go to the field (villages and towns) and record the voices [of] people in the community. The community reporters record the voices of the community members and send them to the radio for broadcasting. Some of the issues they have raised in the past include child marriage, the dowry system, health, citizenship, good government, women's empowerment, agriculture and others. Most of the topics are chosen by the community members and are based on their feedback to the program.

One way that community radio is able to tailor content for local needs was to have local school-teachers craft responses to local questions. Some of these topics include English, Mathematics and Science. These were geared toward lower-literate groups and it also complimented learning for students in the government schools. This is helpful reinforcement of

learning since government school class sizes can often have 80 students per class with one single teacher. Private schooling is sometimes an option for certain villagers, but it is very expensive and most students cannot afford it.

Community radio provides a means for creating localized content that is open to the input of listeners in that it continually evolved to meet the needs of rural learners in appropriate ways. Local people are encouraged to express their opinions and to analyze the factors affecting their own villages. For many, this is a surprising twist to media and information sharing; never before have media sectors focused on issues in rural areas to such a customized extent, let alone actually involved local people in the processes of knowledge sharing. The trend of the past is that "large media companies and newspaper houses give larger space and consideration to those people who have wider social networks, connections, power and ultimately a strong position in society" (Martin, et al., 2007, p. 18).

Theme 2.4 Mobile phones. Voice services and texting are popular means to share bite-sized information between villagers and between villages. Mobile phones are often used by knowledge-workers and are a resource to build a community of practice between knowledge-workers. Several facilitators commented on the utility of content sharing between community centers to exchange website ideas, mobilization techniques, and strategies for overcoming difficult challenges.

Content managers in more remote centers often call other managers in centers located in more urban hubs where they verify information if necessary. Digital photos taken by phones can help to explain problems to experts in more urban areas (e.g., pictures of fields emailed or texted to the regional agricultural extension agent) and to allow the recipient to find information related

to the issue at hand. Some examples of this are: health issues of animals like the infection on the cow's udder; diagnosing skin diseases and appropriate treatment; and agriculture-related questions about pests and pesticides.

   Theme 2.5 TV browsing. Many community centers are responding to the demand for localized content by sending in requests to local TV stations and asking them to broadcast content related to community issues. Referred to as *TV browsing,* this content delivery mechanism focuses on helping the poor and minority communities in areas where there is not Internet. Programs are especially tailored for those who are unable to pay for education or access to technology.

   One group utilizing television for a social cause is the Television Journalist Association of Nepal (TVJ). This group was established to become a window for rural groups to find answers and insights that will help improve their quality of life by screening (on television) important content related to rural issues (TVJ, 2011). Other groups have recognized the potential of TV as a dissemination tool and have broadcasted tutorials and trainings geared toward needs of specific groups. Krishna Pandey, the Government representative for the Open Technologies Resource Center (OTRC) in Nepal spoke about the power of visual media.

> KRISHNA: I have talked to Mr. Bam Thapa, one of the representatives from Citrus Fruit Research Center located in Kritipur. We discussed about the content that they have been providing to villagers. He stated that they have been preparing video tutorials from spreading seeds to producing fruits like lemons and oranges to provide training to the remote villagers and farmers as part of their awareness program. They focus on the interests of villagers and find a way to modify existing content or to create new materials for their specific needs.

   In some communities, people gather to the community center once a week to watch specific *digital stories* geared toward rural village development. Every Saturday between 11am

and 1pm, there is a TV program that shows stories of rural people's challenges and strategies that were used to resolve them.

In one center, a one digital story was told of a woman, Bamiya, a neo-literate who overcame her addiction to betel nut once she was able to read about someone who died from mouth cancer caused by betel nut. Bamiya appeared on the broadcast and shared her story about using all her spare money to buy betel nut up until she read about its cancerous effects and propensity to rot teeth (Martin, K. et al., 2007). She decided to change her behavior and stopped eating the betel nut. Sita related the impact of this TV broadcast:

> SITA: More than fifty [villagers] saw the digital story in Jhuwani Community Center and, afterwards, they expressed their happiness because that story was about a villager like themselves and it was also about an issue in real life, different from some of the other issue. They shared the feelings that enticed them to follow the reading habit of Bamiya.

Theme 2.6 Wiki Posting (Social media outlets). Centers that are connected through the Internet are utilizing Web 2.0 technologies like wikis, blogs, and Facebook to share content to other individuals and between community centers (Lee, 2010). Wikis allow a dynamic and fluid opportunity for exchanging and improving content through an open platform. Most of the content that is exchanged is grassroots content and is open content in the sense that no one will be able to restrict access to modified versions of the content.

A common platform for collaborating and sharing on wikis is the PB Works website that can be used for free. The FOSS Nepal volunteers provide trainings on how to use wikis, blogs and other social media. These volunteer engineers have usually migrated to Kathmandu for higher degrees; however, they usually have ties to or family in a rural village much like the villages where micro-learning centers are located. This helps them know how to interact with

villagers in a grassroots setting and to break down their instruction to a level that can easily be comprehended by those in more remote areas

Theme 2.7 Web Posting. With the help of international donors and NGOs, the Nepalese government has made a push for government ministries and government contractors to share content and educational resources online. In 2011, much of the digital content produced in Nepal is web-based. However, English is the dominant language and this is viewed both positively and negatively. Manohar (2010), the Nepal Government's Vice-Chair of the High Level Commission for Information Technology (HLCIT) commented on this phenomenon:

> MANOHAR: Using the English medium for Internet activities in Nepal is a natural thing. Most of the educated people in Nepal and, particularly the computer people who manage Nepalese websites, have completed their studies in an English program. There is great demand for English in Nepal because it is the language of commerce. Many parents, after teaching their children their indigenous mother tongue, prefer to have their children learn English even before Nepali. This is partly because Nepali is a political language and the language of the higher-caste people who anciently lived in Kathmandu. But, it's also because English opens up opportunities to work abroad and to earn a more competitive income here in our own country. We can't stop the trend toward English, but we must also recognize that Nepali is the language of our country and we must push ourselves to produce materials and resources in that language.

In 2011, there are more online directories and yellow pages than ever before in Nepal. The tourism industry, a major economic sector in Nepal, also has a strong presence on the Web. Several micro-learning centers have received support in order to create and maintain their own websites. After receiving advanced computer training in Nepal, the request from several centers motivated an NGO, Community Development Network, to fund a Youth Summit focused on social networking and website development. Each center manager built a website for their center and learned how to maintain it. Since that first Summit in 2006, the youth knowledge-workers have maintained their friendships and expanded their community of practice. In November

2010, over 30 youth attended the 5th Youth Summit for knowledge-workers serving in micro-learning centers across Nepal.

This has helped bring some of these centers into the eye of international media. In one case, the BBC highlighted the Sankhu center manager, Ramita Shrestha, for her service to the community. This BBC special illuminated Ramita's dedication at connecting even the remotest learners with lifesaving information localized to their own needs and abilities. She was found by the BBC and has been contacted by other NGOs because of the way she actively and aggressively maintains the website for her own center.

Theme 2.8 Big letter books. One outlet for localized content is especially tailored for neo-literates (literacy participants who have finished the six-month literacy class). The government literacy course provides each learner with one book as part of the training. Most people do not have money to go buy other books or reading materials. Since these amateur readers desire to continue learning, but face the challenge of what to read, a new approach for sharing knowledge in community centers is through the creation of *big letter books*.

These thin books with big print are in contrast to the thick books with small print. These books are tailored for learners at all levels, but especially those who have limited skills. These books can be printed on regular paper with large font and in topic areas appropriate for adults, not children (more printed books are available for children than for neo-literate adults). Often, there are few reading materials available in community centers, so making their own is a cost-effective way to get a better quality reading tool in the hands of the needy in rural areas.

One learner spoke about reading these big letter books. She read one story about people with disabilities and it has opened her understanding. She said that she now regards people with

disabilities more favorably and approaches them with understanding. One community center in Jhuwani now has more than 1,000 big letter books about success stories related to practical knowledge, including topics of: farming, disease, child care, filling forms for the government, issues of human rights and citizenship. All these books can be borrowed by local villagers on a rotating-basis and free of charge (Martin, et al., 2007).

Theme 2.9 Lectures and Seminars. Micro-learning centers are often used as a gathering place for the community to come for group discussions around topics of interest. This has typically involved a visit of a local expert or a particular event to highlight or inform beneficiaries in the center.

Some examples of this include: a speech competition regarding the relevance of ICT in rural Nepal; planning for a women's cooperative focused on bottling pickles; a discussion on disabilities and ways to mainstream people with disabilities; an eye disease awareness program where people learned about cataracts and treatment; a meeting with a local police officers to learn about drugs, drug trafficking, health and legal implications of using drugs; gender awareness and broader discussion on human rights; and discussion about strategic plans for launching and sustaining micro-businesses focused on delivering social services in rural settings.

Theme 2.10 Print-out sheets. Many times, the preferred medium for content dissemination is through print-out sheets. Rural villagers are interested to print out forms from the Nepalese Federal Government's computer network. For 25-35 rupees, villagers may ask knowledge-worker to help them find and print certain government documents online that they might spend days trying to get from local bureaucrats: land records, caste certificates, proof of income, etc. (Black, 1999).

For another small fee, any citizen can send a complaint to the state by email with the help of a staff member at the community center (e.g., my pension didn't arrive; my child's teacher didn't show up; my village hand pump doesn't work) and the state guarantees a reply within a week. And, for 10 rupees, a farmer can get a printout listing the prices of any agricultural commodity sold at surrounding markets (ENRD, 2010).

Theme 2.11 Appropriate Technologies. In most parts of Nepal, Internet connectivity is unreliable at best and non-existent at worst. Because of this, knowledge-workers are very savvy utilizing asynchronous tools to download, transport, and upload data. Some of these resources include: CDs, DVDs, flashdrives, and external hard-drives. The most popular of all is the flashdrive (also called *pen-drive*) because it is affordable, small, and can often contain more data than CDs or DVDs. In some community centers, project volunteers in more remote villages built their own data bases to go with those external sources to provide local information on agricultural, health, and government programs for low-income people.

The International Centre for Integrated Mountain Development, ICIMOD, is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush-Himalayas - Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan (ICIMOD, 2011). ICIMOD is facilitating access to digital spatial content through Web mapping and by using well-defined metadata. This is a strategic means for reinforcing cooperation among digital content stakeholders. (Swaabhimaan, 2009).

Open eNRICH is a software tool developed by UNESCO and implemented by the multi-stakeholder Open Knowledge Network (OKN) in order to facilitate collection, archiving, and dissemination of local content by 24 different micro-learning center access points in Nepal.

After training knowledge-workers, the software was installed in each center to exchange and access information. The Content Manager at the learning center will train local people how to use eNRICH to find and share content items. The software is compatible with WAN, LAN and the Internet and allows for communities to independently upload, download, print and share any information that is of use to them (UNESCO, 2007). This software is all open source; this is a good thing in that it is free and modifiable. Rajkumar, a representative of eNRICH, said (UNESCO, 2007, p. 2):

> In the earlier days, if villagers had to buy and sell something like livestock, it would mostly be through middlemen or via information from their relatives or friends who were staying in other villages. But today, if a villager from one area wants to sell his cow, he can access eNRICH and upload the information for other people to see. A potential buyer in another village can access this information and contact the villager and they can work out a price.

> Sivakumar, another spokesman for eNRICH, expounds on the relevance and potential of

this resource and other tailored software geared for rural needs in Himalayan villages (UNESCO, 2007, p. 2):

> [This] software could also be extensively used for gathering public opinion, which would bring more relevancies in getting first-hand data from the rural sector. On the other hand, since the software could also be used to gather opinions, it could altogether garner support for a transparent system in governance.

A big gap in digital content production is in local language publishing. Few newspapers in Nepali languages are online. The problem stems partly from the lack of support for local language computing. The recent landmark breakthroughs in Nepali computing, including support for Nepali Unicode should stimulate development of Nepali content. The development of NepaLinux was a significant contribution to the promotion of free and open source software (FOSS) and computing in Nepali and other native languages in the country. NepaLinux seems to

be user friendly. But, because Linux is still relatively unknown to most Nepali desktop users; there is a need to popularize its use. Many feel that a policy promoting open source software and open content production is also needed.

Question 2. To what extent do knowledge-workers in Himalayan community centers feel that they localize according to their own definitions of localizing?

There were two meta-themes that surfaced in response to Question 2. In answer to the *extent* that knowledge workers localize, I will present the findings from the third and fourth meta-themes: (3) knowledge-workers' definitions of localization; and (4) the continuum of content localization according to the "degree" that they feel that they engage in content localization.

Meta-Theme 3: Localization depends on the definition given by the respondent. The data collected in this study reveal that discussions on localization are hinged on the definition given by the knowledge-worker or stakeholder. And, depending on whom you talk to, you'll get a different definition for localization. Based on stakeholder input when discussing open content and localization, the overarching definition given was this: "open content makes knowledge available but localization makes content useful." At this point, a probing question used to get at deeper levels of meaning would be, "Yes, but what are some of the ways that localization *makes* content useful?"

Manohar Bhattarai (2010) summarized the importance of this question: "The critical question regarding sustainability [of community technology centers] is content. How do we generate value in a telecenter? It's all about localized content and services. We have a great

need for localization in order for content to be relevant. But, how do we know what is relevant content?" Dr. Tuladhar Bhattarai (2010) affirmed the importance of understanding what is relevant to learners: "Retention [in NFE programs] is only good if we are focused on the learners' context and their needs; this is what we mean by localization." Thus, the definition of localization is intricately tied to identifying the context of learners. Subir Pradhanang (2010) referred to context as "… an individual's background. And, before we do anything, we need enough information ahead of time to help learners prepare their minds for learning."

This section emphasizes eight different themes used by knowledge-workers to define localization within the general objective of making knowledge more useful and relevant for local needs. If the conversation flowed openly, I would let it take its own course. However, if the discussion needed a boost, or if the concept of localization seemed too abstract, I provided each respondent a copy of a draft for a Nepali literacy manual titled, *How to Start and Grow Your Own Business* and attempted to remove the focus from philosophizing on the practitioner's own abilities in order for the practitioner to actually demonstrate his or her own strategies for localizing content.

Theme 3.1 Localization is customizing content to reflect local resources. For many respondents, the most important aspect of localization refers to the process of situating content within a framework of local resources. It was explained that, in order for content to make the most sense to learners in the long run, content must draw from local resources and knowledge.

In the semi-urban capital of Kathmandu, community life is considerably different from life in a very rural mountain village. One respondent, Tuladhar, is the leader of the Tamsipakha

Community Learning Center (CLC) in Ward 18 (a community) in the Kathmandu Valley. He

explains that localizing content is tied to using local resources in the instructional process.

> INTERVIEWER: In what ways do you localize content?

> TULADHAR: What makes our literacy programs different in Ward 18 is that we utilize local materials, local wisdom, local experts, local museums and touristic resources to teach. We have learned that the government curriculum for literacy, "Naya Goreto," ("New Trail" in English) is not working. This [curriculum] is now the "old path," not the "new path." Centralized content is not going to work for the majority of learners across the nation. Our retention [of literacy skills] is high – 100% literacy rate in Ward 18 – because we have focused on learning from resources within our own locality.

Mahesh Bist, current Program Director for World Vision International (WVI), with over

20 years of experience working in Himalayan communities, emphasizes localization and

localities.

> MAHESH: The way that we localize for each learning community is by emphasizing local products in the images of the manual. We help learners feel comfortable with the content by including more background to stories by supplementing them with the pictures of local places.

> Rohit Pradhan, UNESCO's former Asia Regional Director of NonFormal Education

Programs, also advocates for the use of local resources as an integral component to content

localization. He further emphasized that the ecology of a community, particularly a rural

community, is very rich and nuanced.

> ROHIT: Localization is tied to the word *local*. If we want to understand what is part of a *local* place, we must look at all of the different components. This means we must consider hierarchies, history, customs, ethnicities, cultures, coordination, participation, quality, race, religion, and networks. Some think that life in a rural community is simple. But, I can tell you that life in a rural community is very complex.

Another dimension of situating content within the resources of a locality is considering the

degree of development that a village possesses. One knowledge-worker from a semi-urban

village near Gorkha Bazaar (about 6 hours from Kathmandu) explained that different villages

have different capacities and this should be considered as part of the localization activities.

> KALPANA: In most of the villages around [Gorkha District], people do not have a community toilet or a community water tap. The life for these people is hard. Most girls and women especially have to spend many hours a day collecting water and this changes their context. They can only think of going to a literacy class after all the chores are done and that will be in the evening hours. For these reasons, if the [literacy] manual has a picture of a water tap, they may disregard this picture and say, "Oh, this does not relate to my circumstance." But that information could be good for the community, it's only that the images chosen to teach the concept do not make sense for that place.

In contrast to Kalpana, her colleague, Mira, had a different opinion. Although Mira is

also from Gorkha District, she represents a more rural community than Kalpana. She, too, is a

community center manager and trainer in their semi-urban micro-learning center.

> MIRA: I believe that the pictures used in the lessons should include toilet and tap even if those villages do not have them. … yes… the pictures are a kind of way whereby we help create a standard for the community. If we have the pictures of young girls carrying the heavy load of water up the mountain or of young children [defecating] in the public place, then we may be sending a message to those learners that these behaviors are okay. We may still talk about the same principles or truths of a lesson using a standard that is [reachable] by that rural village even though their condition of development is not good yet. This is a big reason people want to come to the literacy class. They want to improve their lives with knowledge that they don't yet know.

Theme 3.2. Localization is translating content so locals can read and understand it.

Another dimension of defining localization is the language that people use. One knowledge-

worker, Ramita, is from a semi-rural community center in Sankhu. Some learners who visit her

center trek up to 3 hours one-way to receive training or to find information. Sankhu also has an

active youth club that treks tailored content out to the more remote mountain villages.

> RAMITA: Localization means using local words. Until and unless we use the language of the people, they will not know that this information is also for them. But, when we use examples that the learners know, we find they are happy with us [knowledge-workers]. We must provide training in a way that makes sense to the people so that they can make knowledge meaningful. When we teach merchants, we show them how they can have

more profit in their tea-shops when using spreadsheets to track their finances. If we use the language they use, they listen to us.

NaniHira's perspective corroborates Ramita's insights. Although language is not the only component of effective localization, she showed that it is a major issue in the urban center of Kathmandu, where she is a knowledge-worker and has been a literacy teacher for over 15 years.

NANIHIRA: A bigger thing for me is how to help those different groups of learners. In Nepal, there are 103 ethnic groups and 92 languages. How do we focus on local needs and local issues? We do not necessarily focus on culture only. Language is also important and it connects people because it has deeper meaning in their lives and in their family histories. Most people in Nepal have lived in their own localities for hundreds of years. Language is tied to their place of dwelling and to their sense of identity.

Deepak Thapa, from the very rural center of Maskichaab, acknowledges the importance of language in the localization activities of their community center. Since most of the knowledge-workers in their center are youth, he showed that sometimes the youth are not sensitive to the language of other people in their own villages, especially elders.

DEEPAK: We must find ways to teach according to our understanding of the needs and interests of those whom we are serving. We sometimes use language in the center that is not familiar to other people. We had the case where one elder continued to talk about *e-commerce* in the midst of discussing his interest in computers. We asked him what he meant by *e-commerce* and he said that he did not know what it was. He said he used that word because he had heard his nephews speak of this since they had come from Pokhara (a more urban city). The nephews had told him that computers could help him do *e-commerce* which meant that he could sell his mandarin oranges to merchants in Japan instead of through the trader who came to Gorkha Bazaar. He said he did not know what e-commerce was but that he wanted to get a computer in his village. When we used language that he knows, he better understood e-commerce and it created the opportunity for him to teach others around him, especially his family.

Ramita, in Sankhu, said that she had a similiar experience teaching basic computer skills to a women's literacy class.

RAMITA: When we teach domestic housewives, we first talk to them about their homes and we are showing them how knowledge kept in a computer is also knowledge they can use in their homes. We tell them to think like this desktop is your home. In your home you have rooms and this is like having many drives – like a hard-drive and a c:drive and a flashdrive… those are all the rooms in your home (or your desktop). And in your rooms you have so many cupboards where you put your food and your clothes. These cupboards, well, they are what is called a folder. And you put items in your folder that you want to save – like letters from your children overseas, or like your [loan amortization] documents for your agricultural loan. This computer is here to help you and you can use it for your own interests.

Theme 3.3 Localization is embedding content within a local cultural framework.

Another perspective on localization was an emphasis on the culture of different learning enclaves. In Nepal, there are over 103 ethnic groups. For each of these groups, there are different tribal norms, customs, and traditions. Rohit Pradhan, as the current Director for World Vision International (WVI), comes from one of the minority tribes and has visited many of these minority groups across the Himalayas. He speaks of the importance of culture with regard to localizing content.

ROHIT: Localization is an activity that happens at many levels. To truly localize means to reach the house in the village in a customized way. We are a diverse group here today [at a focus group discussion, FGD I, in Kathmandu]. We reflect people from the far west of Nepal, far east of Nepal, Kathmandu capital area, Terai region, hilly area, ethnic communities, Tharu tribal groups, Brahmin high caste groups, government groups, UN international groups, professors from Tribhuvhan University, an 18-year old facilitator, a mother with 2 children, and we even have a 90-year old elder, the founder of an NGO, here with us today. This is the face of Nepal: a diverse blend of cultures. We must never forget that each person, each group of people, have their own needs. Culture is a big part of shaping one's view of the world. If we want to reach every person across Nepal, we will need a framework that can be customized to even the most rural villager.

Many other respondents corroborated the importance of culture in the process of localizing content. Bishnu Adhikari, the Director of a small NGO, CHOICE, emphasized that outsiders cannot know what is needed in any place without considering the culture of the locals. He spoke about a project where CHOICE is working on building schools in Lamjung (a remote

region of Nepal) and also in the arena of rural garbage management. He acknowledged that even

he is an outsider to the cultures where he works.

> BISHNU: We may draft plans here in Kathmandu or in other parts of the world. But, until you get to the village [where the project will occur], you cannot know how the local culture may influence the project. Cultural roots are much stronger than a one-day awareness campaign. We must consider how deep cultural ties run in the beliefs, attitudes, and behaviors of people—even in yourself (smiling at me).

Theme 3.4 Localization is incorporating gender sensitive messages within content.

Many respondents felt that an important component of localizing content in Nepal is gender

sensitivity. This is because, until the last decade, there has not been a strong female

representation in educational activities. In fact, most government-generated curricula have a

strong male bias. In 2010, the national literacy rates still reflect the educational fallout of this

male-privileged society: 27.6% of females are literate, while 62.7% of males are literate for a

national literacy rate of 45.2% (GoN, 2008). A young female knowledge-worker from a rural

village near Gorkha expressed her priority for content that reflects gender mainstreaming:

> MIRA: Appropriate localization can decrease sexual discrimination instead of advancing or even reinforcing discrimination against women. In the pictures of a manual or of other lesson plans, there should be as many women participating as men. It does not mean that we must only show women. This is also not good. But we can show a balanced view of both sexes engaging in that activity like voting or attending a health workshop or buying goods in the market.

> Rohit also supports this view of gender and content localization.

> ROHIT: Tiffany, you must always, always, always remember the face of the rural Nepali woman. This is for whom we work. This is for whom we hope to make a positive difference. The reason we localize is so that we can reach the rural Nepali woman. If content doesn't make sense to her, what is the point of the programs that we are running?

Theme 3.5 Localization is incorporating religious values and messages into content.

Since the majority religion in Nepal is Hinduism (80.6%), many of the manuals created by the government and by NGOs have a dominant Hindu influence. However, there are pockets of religious diversity scattered across the nation of Nepal, including: Buddhism (10.7%), Muslim (3.6%), Kirant Mundhum (indigenous religion) (3.6%), Christianity (.5%) and other minority religions (GoN, 2008). Religious beliefs and ideas are intricately woven in the fabric of an individual's identity as well as a community's identity. Many respondents felt that religion should be one of the main lenses used to determine whether content has been appropriately localized. One example was told by a Buddhist knowledge-worker who works in a community of Tibetan refugees.

> DHANA LAMA: We were working on a health literacy campaign in our community. The majority of teaching tools we were given [from the Ministry of Health] presented the health message on a poster that had been printed here [in Kathmandu]. The images in the poster made it clear that these were Hindu people because of the tika [red dot in the middle of the forehead]. We found that many villagers did not believe this health message was important for them. They turned away saying, "This is only for the city people. This is for Hindu people, not for Buddhist people." We then decided that we would make the content more suitable [localized] for our community. Since we follow Buddhism from Tibet, we are always keeping the thangka [wall-hangings made by monks as a teaching tool about the Buddha's life]. Our most holy thangka has the image of the mandala [the circle of the Buddha's life which is used as a spiritual teaching tool]. Do you know? Once we substituted the Hindu posters for the Buddhist mandalas, we found so much interest in our health messages. We soon learned that customizing the content was the better way … today we are integrating Buddhist messages into many of our lessons.

Theme 3.6 Localization is situating content within a spatial geographic lens. Most people subdivide Nepal into four distinct geographies: (1) the *High Mountain Areas*, (northern mountain region (a.k.a. *Everest Region*); (2) the *Hilly Areas* rice-terraces in central Nepal; (3) the

Terai Region, humid grasslands of the south; and (4) the *Semi-Urban Areas* in the tri-city area (Kathmandu, Lalitpur and Bhaktapur).

 Because these geographies are so extreme, the dress, cultural, and dietary patterns are distinct in each of these regions. Additionally, health concerns and livelihoods are different in all four regions. Thus, a farmer in the Terai region of Nepal will have more in common with another farmer in the Terai region of India than he or she would have with a fellow Nepalese person from the High Mountain Area.

Because geography impacts life and lifestyles so drastically, many participants felt that geography was one of the most important factors in localizing content. Hemraj is the Program Manager for TMUC, a small Nepalese NGO doing work with micro-learning centers in six districts across Nepal.

> HEMRAJ: You know, it is very much important for these teaching tools to have the image of the typical Nepali person in their typical clothing and doing customary activities of their own place. But, we have so many different geographies here in Nepal. We know it is not going to be possible for one manual to be a good fit for all of those different regions. The needs and the dress are different in semi-urban areas in contrast to the more rural areas.

Echoing this sentiment, Manohar, the Vice-Chair for the Nepali Government's apex organization, High Level Commission for Information Technology (HLCIT), encouraged ICT stakeholders to consider the importance of localization according to geographies.

> MANOHAR: Localization is more than translation. It has a lot to do with understanding the various geographies here in Nepal. As you know, Tiffany, we have many "worlds" here in Nepal – the high mountain areas, the hilly areas, the plains areas. All of these areas have different needs, interests and capacities. We must find a way to reach out to them with content that is relevant to their needs.

The topic of geography was referenced in many aspects of the discussions. The only way to understand many issues in Nepal is through a spatial analysis. Judda Gurung, Acting Member of the High Level Commission for Information Technology (HLCIT) explains:

> JUDDA: We need to involve people from the community itself in localization. This is difficult in far west Nepal. [The villagers] have less exposure in those areas. You can find one language being spoken on one side of a mountain and a different language being spoken on the other side of that same mountain. What do we do in the areas where there is no common ground through the Nepali language? Geography has so much influence on the quality of localization. We must consider their situation, but, still, we must put some of the responsibility on their shoulders in as much as they are capable. We don't know their rural realities. We don't know how different life can be in those areas even though they are still Nepali people like us here in Kathmandu.

Theme 3.7 Localization is emphasizing content focused on solving shared problems.

One definition of localization placed an emphasis on the issues that connect a particular learning group. In areas where there is a diverse mix of religions, ethnicities, tribal customs, or cultural norms, it may be more efficacious to focus on the commonalities that a group shares instead of its differences. In this case, localization of content is best if tethered to critical issues and shared problems. Tuladhar, the Program Director for a semi-urban community learning center (CLC) in Kathmandu expounds on this concept.

> TULADHAR: We have a very diverse mix of learners. Look at the learning plans of those in our literacy classes. They are all focused on a tailored (localized) learning plan. We know that localization is the key to retention and comprehension. But how are these learning plans customized to the needs of each learner? We make a personal plan for each learner. We sit with them and discuss their goals as individuals. Then we make some strategies together as a group. We find the connections. It is common for the people in our locality to have an interest in such issues as water hygiene, income generation, democracy, and women's rights. We share readings and perform dramas and have guest lecturers come to teach us of these important topics related to our shared problems.

Another respondent who agreed with this approach was Rudra Lal Mulmi, the Founder and President of Tulasi Meher UNESCO Club (TMUC). He spoke about programs in six different districts of Nepal. Although TMUC emphasizes basic literacy classes as the entrypoint to other development initiatives, they have found that retention in classes is high if the learning materials are rich with relevant content.

> MULMIJI: Yes, we have many strategies we use to ensure comprehension, like: reading out loud, repetition, and dictation. But the best strategy we have used in order to keep attention of learners and to ensure they don't drop out, is this: discussion related to the issues in learners' lives. We find that facilitators [knowledge-workers] are requested to teach [the learners] matters of health, gender discrimination, microbusiness, and also early childhood development. Many of the learners in our classes are women. They want to solve problems in their homes and in their villages.

Theme 3.8 Localization of content means emphasizing both unity and diversity. An interesting debate occurred during a focus group discussion (FGD I, Appendix D). During a small group session, different stakeholders were critiquing the localized Nepali version of *How to Start and Grow Your Own Business.* When these two small groups presented to the larger group, two of them were at odds regarding the issue of unity and diversity.

On one hand, it was proposed that localization was a way to cultivate individualism and that localized content would be more effective if it amplified the emphasis on a certain group's uniqueness. Chhapsang, a knowledge-worker from a Tibetan Buddhist community explained:

> CHHAPSANG LAMA: We are many different groups here in Nepal. We gain strength if we shine the light on the different groups and tribal people of this nation. We are great because we are all different.

On the other hand, one group believed that it was important for learning materials to downplay differences and, instead, to emphasize unity within a group and to nurture a focus on

commonalities. Professor Bhagawan Ratna Tuladhar, the Program Director for UNESCO's CLC

in Kathmandu explained.

> TULADHAR: A key ingredient of localization is to specify the needs of groups. In
> Nepal, there are 103 ethnic groups and 92 languages. We focus on local needs, local
> issues, not necessarily culture only. In our ward, every literacy class is mixed caste,
> mixed religion, and mixed ethnicity. However, there is a unique blend of local character
> and some common elements shared by all that we can call the 'local features.'

Rohit, the Program Director of World Vision International, added synthesis to both of

these views and concluded that:

> ROHIT: We request the participation of all of these stakeholders to help modify these
> [learning tools] and manuals and to share back your ideas of how to improve the
> localization of this content. To sustain anything, you need ownership. But, to ensure
> broader ownership, you need diverse participants for the group. A key to localization is
> to always clarify who your target group is. We need to recognize that we are working
> with individual groups but one community. We are one nation with common issues
> although we all have different issues at a village level. We live together here in this
> nation of Nepal – united together through our diversity.

   Meta-Theme 4: Localization occurs across a continuum. It was difficult to define the

degree of content localization in response to the question, "To what extent do knowledge-

workers localize?" However, it was easy to see that each center had unique dynamics with

different abilities and approaches for localizing. I have grouped the seven sites I visited across a

continuum from high to low degree of localization activities according to the knowledge-

workers' own perceptions of the degree to which localization occurs in their respective facilities.

Two sites are in the high degree level, three in the medium degree level, and two in the low

degree level. I have chosen to place them on a qualitative continuum instead of a quantitative

scale because these labels are relative. Here, they are only grouped in terms of how they viewed

themselves in conversations regarding localization. They are not judged in context of each other

or in terms of other similar centers across the nation. And, they are not evaluated in terms of other services (besides localized content) that they provide to their communities.

It should not be assumed that 'high degree' is synonymous with 'good center' or low degree is synonymous with 'bad center.' Since this dissertation is only focused on localizing, I have not attempted to rank the quality of the overall center, although I was repeatedly told that the degree of localization is directly proportional to a center's success and sustainability. This presentation of sites is helpful to see the scene where content localization takes place and by whom it is executed. Key descriptions and distinctions across the continuum will be discussed at the beginning of each theme.

Theme 4.1 Some sites manifest a high degree of localization. Centers grouped in the high category are those supported by knowledge-workers and content managers who feel that they are very conscientious about content localization. There is evidence of knowledge-workers' sense of competency to respond to learners' interests and needs in order that learners may solve problems. These dynamics appear to be positively correlated with attendance and activities at the center.

Tamsipakha Community Learning Center (CLC) in Ward 18. This community-learning center (CLC) was established inside the government-funded community center of Ward 18, a neighborhood in Central Kathmandu. This neighborhood is ethnically, culturally, and religiously diverse. Many people who are interested in nonformal education are migrant workers who have come to Kathmandu from different regions across the nation of Nepal. Volunteers from the local community manage the Ward 18 CLC. UNESCO provided funding for some literacy instructors at the same time they established the CLC within the existing center.

The concept of the CLC evolved in Nepal during the 1980s as a result of a UN project focused on nonformal education for adult and female literacy through Village Reading Centers (VRC). The concept of VRC was revitalized and further broadened from a 'reading' center to a 'learning' center and, in 1999, the CLC was initiated to support literacy, post-literacy and continuing education opportunities.

Some of the major activities of the Ward 18 CLC include basic literacy and post literacy classes, training on communication and social interaction skills, training on various occupational skills, activities to foster local culture and indigenous knowledge, social awareness raising and community mobilization, information dissemination, community survey and database, and income generating activities such as handicrafts, bee keeping, goat keeping, poultry farming, horticulture, cash crop production, etc.

In 2005, ICT (e.g., digital camera, a computer, Internet, and a printer) was introduced to the CLC to experiment with ways to bolster NFE. Learners were especially interested to work with facilitators to build their own customized study materials which integrated digital photos from the learners' daily lives—their homes, family members, surroundings and general items – which in turn are linked to letters and numbers. For example, the letter *a* might be matched with a photograph of a learner's ama (mother). Associated images and letters are then compiled in digital slide-presentations, which are stored on the CLCs' computers, on the learners' own CD, flashdrive or in print formats. Learners then use these to practice and build their literacy skills.

Digital cameras and computers helped to personalize learning and thereby facilitated the learning process, with students going from being unable to spell even their own names to being able to read and write simple sentences in a short period of time.

The NFE Program Director at Ward 18 is Professor Bhagwan Ratna Tuladhar, a volunteer and emeritus Political Science Professor from Tribhuvhan University in Kathmandu. He commented on his experience localizing content for learners.

> TULADHAR: Everything is tied to localization! Motivation and participation are part of localization. We have had the realization that the 9-month government literacy program, "Naya Goreto," is insufficient for developing literacy skills. What we have learned is that, most learners need at least 2 years of training before they are prepared to be self-learners. Comprehension retention will remain weak unless there is continuous focus on the learner. Retention is good if we are focused on the learners and their needs; this is what we mean by localization. We do not focus on technology. We focus on content. Localization reflects a method, an approach and application aimed at (1) motivation, (2) easy comprehension, and (3) retention.

In 2007, Ward 18 received an award from UNESCO because they had enrolled every illiterate person in their community in at least one literacy course. NaniHira, a literacy instructor who has worked in both volunteer and paid capacities, explains why they had such success in recruiting and retaining literacy participants:

> NANIHIRA: We have 100% literacy in Ward 18 because we use local materials in our instruction. We emphasize local wisdom in our classes. We involve local experts in the instruction. We participate in local tourism activities – we visit museums and we invite literacy learners to take notes on their daily world. Discussing issues in their own world gives these women a sense of power.

It was emphasized that local content is literal—it is words and signs that are in their own locality.

> NANIHIRA: One literacy class was held at the market. They learned how to read words that are all around them. They learned numeracy skills by using money in the marketplace. We tailored learning to their ability levels and interests. After this class, one learner said: "I now feel I can make my own choices. I can decide what I will prepare my family for dinner instead of relying on my husband to make that decision." Another learner said, "I am now ready to choose my own fabric for making my clothes and I will not be cheated at the market."

Another key point made by Tuladhar was that, in order to localize content effectively, a knowledge-worker must be committed to building trust and a deeper relationship with the learners.

> TULADHAR: Some traditional learning strategies we use to ensure comprehension include: reading out loud, repetition, and discussion related to the issues. But, the biggest factor in sustaining learners' interest in education is by first building a relationship of trust with the learners. The facilitator is a critical player. They are mostly volunteers and they truly mobilize the society. For those who come to the literacy class, they experience increased empowerment. They start to participate in more decision-making at the home level. For example, they decide what to buy at the market and they determine what they want to serve for dinner. They make decisions about what clothes to buy. Everywhere you can see application of localized problem solving.

After conducting interviews with the knowledge-workers of the CLC, the research team visited three classes that were being held at that time. One of the members of our research team, Shrutee Shrestha, was surprised by what she learned through interaction with learners at the CLC.

Although Shrutee was born and raised in Kathmandu, her family was unique because her mother was literate. This difference motivated their parents to sell family fields for Shrutee and her two sisters to go to school when, had they been born in almost any other Nepalese family, they would have been required to stay home and work. Shrutee had never talked to adult women about starting on the path of education later in life.

> SHRUTEE: It was a new experience for me to see so many illiterate women from the villages that had immigrated to Kathmandu in search of opportunities. It is hard to imagine their life in Kathmandu when they can hardly recognize Nepalese rupees and can hardly calculate their grocery totals. Even then, they struggle to survive in a new city hoping people would not take advantage of them. One lady told me after learning to write her name, "I feel like I was a blind person and now I have eyes to see." Another lady said, "Now I can die happy because now I can read."

Localizing content is an everyday activity in the Ward 18 CLC. Whether through technology or other resources, localization is embedded in a teaching and learning philosophy that permeates all center activities.

Sankhu Youth-Managed Resource Center (YMRC). Sankhu is a semi-urban Newari village about 2 hours away from downtown Kathmandu. Sankhu is famous for its social and religious history; most people are part of the Newar tribe with shared traditions and cultural norms. The majority of this village depends on agricultural work, particularly on rice and potato production.

The Youth Managed Resource Center (YMRC) in Sankhu is located in a rented room of a government building and was started in 2004 with support from the Government of Nepal (GoN)'s National Information Technology Center (NITC). At that time, a young woman named Ramita Shrestha was recruited and trained to be the Center Manager and to provide training, mobilization, and content support to villagers. Ramita trained four other youth leaders to support her and they were able to eke out meager salaries based on pay-based information services in the center.

The YMRC objective is to utilize ICT in order to meet the Millennium Development Goals (MDG) focused on holistically reducing poverty by the year 2015 (TMUC, 2010). The center provides access to information, particularly related to agriculture production, tele-medicine, and enterprise. Resources in the center include: Internet, 4 computers, a 4-in-1 (printer, fax, scanner, copier), a digital camera, a microphone, and a pair of speakers. Services in the center include: information searching; training on computers; placing and receiving telephone calls; Internet; email support; formatting letters; making spreadsheets; creating

pamphlets; surfing the web for study, business, and entertainment; graphic designing; desktop

publishing; and video conferencing.

Ramita, the original site manager who was a full-time volunteer for over three years in

the center, talks about how their center has evolved. She is now employed by another

organization, but gives volunteer service at the YMRC in the afternoons and evenings.

> RAMITA: Today, our Sankhu YMRC is doing different projects that are based on
> sustainable community development and awareness-raising. YMRC prides itself as not
> only a "tele-center" [as it was called at inception]. Today, YMRC is a community
> training center, a library, an information center, and a place for youth and women to
> gather to share their ideas and to make plans for the future. YMRC will serve on various
> projects to rural community according to community desire and demand. Others
> introduce to us as *Village Ambassadors*.

Ramita has trained four other volunteers who still help in the Sankhu YMRC. When

asked about localizing content, Ramita got very animated and spoke very fast on this topic of

which she feels passionately.

> RAMITA: Unless we provide localization of content in our training, people will not be
> interested in coming to our center. We must package our training according to the words
> and the meanings that make sense to the daily lives of villagers. You know, the existing
> training materials are not geared to the needs of rural people - especially to rural women's
> needs. We have shared materials with them and learned that without changing them first,
> the people cannot understand. We made some localized training tools at our Sankhu
> center. Today, we are sharing this training manual here and some other training tools
> with other centers. We do some sharing like this when we've had the youth summit [an
> annual gathering of center managers to share content development ideas and training
> strategies].

In an effort to understand more about the processes used to localize, I asked Ramita when

she localizes and how.

> RAMITA: When? Oh, good trainers are always localizing. We must teach learners
> according to their needs. We cannot even begin until and unless we have asked them
> what their interests are. Normally, we are going out to the village, to the rice field, to the
> houses of women and we are talking with them first. This is social mobilization program.
> We talk to them to find out what they are interested in or they share some problems they

are having. We then go back to our center and we find information. Then we invite them to come to the center for a presentation. If there are many people in one community who are interested to learn, we go out to their center and teach them there. We sit in a circle under the tree once they have come back from their fields.

INTERVIEWER: What are some of the topics that villagers are interested in?

RAMITA: They are especially interested in health topics. Before, they were very interested in political news because the situation with the Maoists was getting so bad. But, we have responded to interests in many areas – sometimes printing the letters from their children who have migrated to urban areas for work. Sometimes finding information on farming equipment. Sometimes we inform on job vacancies and opportunities in Kathmandu.

INTERVIEWER: How do you put the information in a good format for these rural villagers?

RAMITA: We had a big concern in our village about eye health. People were asking us about eye blindness and there were not people in our village that knew much more on this. So, we did some research online and found that there is Til Ganga Eye Hospital in Kathmandu. There are some people at the Eye Hospital who are doing work in this area for Nepal. We managed to have an expert come and to teach us in our center. Now, we volunteers can provide a weekly eye check-up program for aware about eye blindness problem when people get older. The program has started from January 2008. So we call above-40 aged people for checking their eyes. What is best is that now there is free treatment service for people from our village who become patients in this hospital. Around 15 patients got free surgery of eye. There is not any eye hospital around Sankhu village. For eye check-up, people have to trek around 1-2 hours and then go by bus. Still, though, they have to wait for long queue in hospital. YMRC Sankhu is very glad to provide this service to community. All Sankhu wards are also taking benefit from it.

INTERVIEWER: What other activities have you done to localize content for people in Sankhu?

RAMITA: We had elders in our village tell us they were worried for the sanitation in rivers and wells nowadays. We took information from them about how the land used to be in older day when these elders were youths. They describe such nice picture we also want this thing. We managed for one elder person to come talk to the youths in our village. Then we recorded this meeting and made an audio file [mp3 podcast] that we can share with those who didn't come that time. We also have translated this discussion and now have it documented in a Word file. We have done similar things for making records of historic and sacred places here in Sankhu. The goddess Bajrayogini Festival is famous for all Hindu people—even those from India come to this. We are recording this knowledge to share to people of Sankhu and others. Some are talking about doing eco-

tourism and using iPod for touristic knowledge by foreign persons. We also organized a sanitation awareness campaign and taught people in all the wards around Sankhu. Then we invited villagers to join us for cleaning of community, especially of sacred historic and temple sites.

Sunila is a classmate of Ramita and was recruited to be a volunteer in 2005. Both Sunila and Ramita's parents are illiterate, but Sunila's parents are more conservative and were initially concerned about their daughter leaving the home to go to a computer center. She commented on the activities in the center and the importance of content localizing in their center.

INTERVIEWER: Why is localizing content important?

SUNILA: My family members were worried that computers would bring bad things. Some parents did not want their children to come to the center. They said that computers were just for video games and that the children would do poorly in school if they came here. So we had to let the parents know that we could help their children do better in school by learning things in our center that would help performing on science and maths. We volunteers found activities and software programs that can help the young people with content related to their studies. Now there are new programs in Nepali language so it makes learning better for lower literate people. We formed a "community youth club" (CYC) for our village whereby youth could gather at the center, mentor other youth, and get support from knowledge-workers who were able to surf the Internet in search of answers or knowledge-based videos and audio files. We have conducted poetry and debate competition and used digital camera to video the presenters. We also encouraged students to come over to the YMRC to do their homework.

Devi Shrestha is another classmate of Ramita's and was recruited to be a volunteer in 2004. He got pressure from his family in 2008 to stop volunteering so he could get a paying job in Kathmandu. (As a son, he is expected to bring home a salary for his family.) He is still involved in activities in the center and participated in an interview during our site visit.

INTERVIEWER: In what ways do you localize content?

DEVI: We localize by finding information that is good and then we are making it easier for people to understand. We had many people coming to our center from very rural villages. They were hiking over several mountains to reach our center. For some persons, this is a 3-hour walk one way. There are not reading materials in these far-flung areas. Then we decided that we could help them to reduce the problems. We raised

support through our CYC for books to start a community library in this remote village. We got donations from many different groups. *Room to Read* gave books - but most of these are not relevant to the local needs of people. They are just "for looks only" because they are not in Nepali and they are not related to issues that people face at a village level. Really, those books are actually useless when it comes to books. We helped these people find information they want inside our center and then we print it and send out paper books for reading in that place. What we really need are more dual language books. People are interested in both English and Nepali—but if that information is not also available in Nepali, even the English books are not useful. Digital books are not [currently] useful to these people because there is no electricity in these areas. But, we can print those books at the Sankhu center and take them out to the more remote areas. Yes, if there are good materials and resources according to their needs and that we can find online in the center, we can use them in rural villages also.

The rural satellite library created by Sankhu's Community Youth Club (CYC), reflects a pattern of capacity-building that has occurred in some other centers as well. This is a unique relay design of volunteerism where groups of knowledgeable people (in Kathmandu or another urban hub) provide mentoring to centers in semi-urban centers that then help others in more rural centers. This tag-team-approach to development is one model that seems relevant for both its cost-effective design and its sustainability potential because it is hinged mostly on relationships.

In summary, the centers grouped in this first category represent a high degree of localization activities. The Ward 18 Community Learning Center (CLC) and the Sankhu Youth-Managed Resource Center (YMRC) were placed in this category because the respective knowledge-workers and content managers seem to have high awareness and feel that they have the ability to engage in content localization. It appears that these leaders are confident to address some of the obstacles in the way of knowledge-workers and that content localization receives a high priority focus. Existing skills and abilities have created a dynamic in these micro-learning centers that influences the culture and ecology of the learning environment. Attendance in

classes and activities generated at these centers appears to be a bi-product of these knowledge-workers' efforts and commitment to serving learners in a tailored way.

Theme 4.2 Some sites manifest a medium degree of localization. Centers grouped in the medium category are those supported by knowledge-workers or content managers who feel that they are involved in some localization activities but are limited because of certain barriers that prevent them from engaging in more localization activities. There are several barriers that they feel are related to both human and physical capacity and these obstacles prevent them from optimally responding to learners' interests and needs in order that more beneficiaries may be empowered with content matched to solve local problems.

Gorkha Youth-Managed Resource Center (YMRC). Gorkha is a village-hub located in the middle of Gorkha District, about 6 hours away from downtown Kathmandu. As the hub of other villages, Gorkha is a strategic access point whereby most villagers must pass in order to catch a bus or to trade goods. Gorkha is very mountainous and is home of the Gorkah Nath Temple site, the ancient capital of the nation of Nepal. The majority of livelihoods in this village depend on agricultural work, particularly on rice production.

The Tulasi Meher UNESCO Club (TMUC) started the Youth-Managed Resource Center (YMRC) in Gorkha in 2005. TMUC, a Nepalese NGO, has been doing literacy work in remote villages of Gorkha for the past 20 years. The YMRC is located in a spare room of TMUC's Gorkha District office. With funding support from ProLiteracy Worldwide, this YMRC started with four computers, two digital cameras, a printer, but no Internet. This center is used for vocational training as well as literacy classes and there are 12 sewing machines. Most youth are

not interested to learn sewing skills; they view computers as a more strategic form of vocational training.

In 2005, scholarships were provided for two volunteer youth managers to get training in order to teach at the YMRC. After being trained, those two youth leaders left the center not long afterward. In 2007, training was provided again for two new volunteer youth managers; similarly, they have also left the center. Many youth volunteers have volunteered at this center, but there has been a high degree of turnover. Some of the youth say that it would be better if they could earn a salary while providing services at the YMRC. Other youth have migrated to more urban areas like Pokhara or Kathmandu in search of employment.

The YMRC objective is to provide a place for youth to gather and learn skills. After receiving training, each youth is encouraged to serve their own village as a facilitator of a participatory community program, facilitating discussions and skills development related to the interests of respective rural groups. The philosophy written at the door of the YMRC is "Self-help of the community, by the community, and for the community." This principle is intended to augment non-formal education and life long learning activities at the community level.

The Youth-Managed Resource Center provides technology training and the facilitation of community action projects. This center is intended to target rural communities, particularly emphasizing the empowerment of the most disadvantaged women, men, girls and boys in rural Nepali villages, including: Dalits (untouchables), indigenous, minority, and ethnic groups.

Prem Kunwar is a youth manager for the Gorkha YMRC. He said that the youth managers have many ideas for how to better help villagers access content. However, organizational and programmatic issues have handicapped the activities of volunteers and he

feels that this has dampened the interest of villagers to use the YMRC as a resource. There

appears to be a lack of capacity in order to localize content for the rural people's needs.

> PREM: We have gotten some support from TMUC Headquarters [in Kathmandu] and some from our TMUC District office [in Gorkha]… We have learned about some educational resources, but the degree of support given to us… is not sufficient to our [YMRC] organization and to us individually. We have [designed] many programs but lack of financial and instruments has hanged [suffocated] our plans. The main problem in our center is that we are not free to do work even though we are volunteers. Everything in this center must be approved from the authority of elders or staff at the center. We would like to offer more support to villagers, but we don't have enough resources ourselves in order to help them. We sometimes feel there is no benefit working together with TMUC. That is why so many staff members and volunteers have left this project.

> After Prem spoke, TMUC's Director of the Gorkha District Board, Dhiraj Maskey,

spoke about the center. He agreed that there were some capacity issues that needed to be

addressed.

> DHIRAJ: Yes, localization of content is desirable, but we need more training along these lines. Also, once localization training has taken place, how do we perpetuate the training so that, when volunteers move on, there is still the capacity to continue localizing and teaching effectively as new volunteers take their place?

> The adults seemed to perceive that the fundamental obstacle faced by knowledge-

workers was a training issue. However, most of the youth seemed to perceive the biggest

obstacle was an organizational management issue.

> KALPANA: There is some tension between the youth-led YMRC and the adult-led TMUC. Some of this is may be due to unknown duties and responsibilities. Also, we don't know if youth are able to lead or if we are required to let the elders lead. The problem is that they don't know much about technology, but they still want to tell us how to do things. We feel frustrated because they limit our work and they lock our center so that we cannot do all of what we had been planning.

Both parties seemed to agree that, if there were more financial and physical resources or

infrastructure, there would be more success in responding to learner's content needs. Hemraj

Dhakal, the Program Director for all activities at the YMRC, emphasized this and the need to

also build capacity.

> HEMRAJ: Without enough resources, we are unable to continue this [YMRC]. Please tell us, what do you think? Should content localization happen at a central level (e.g., TMUC Headquarters in Kathmandu) or at the class level (e.g., a facilitator in YMRC office)? What will be most effective?

Mira Kunwar, a female youth manager, expressed her interests to respond to the needs of rural

villagers who come to the Gorkha YMRC in search of appropriate content for solving problems.

> MIRA: I feel we are only understanding the needs of [villagers] near to the YMRC. We need to understand the priorities of the minority groups, like those in Maskichaab [a village 3-4 hours walking distance from the center], and include them also. Youth need a platform to exchange ideas between other facilitators. We should work together to change the curriculum into something like what makes sense for those whom we teach. We need appropriate localizing tools—we should localize for each individual's training and for the various environments of each individual. We cannot help these villagers as much as is needed because there is no Internet here in this center. We are feeling helpless sometimes.

> As an interviewer from Kathmandu who had never experienced working in villages of

Nepal had some powerful insights by visiting these lower-income people in her own nation.

> SHRUTEE: [Gorkha YMRC] was a live demonstration of why the development work is difficult to implement. The heated debates between two parties (of the advisors of the committee and the youths), was just an example of why it is hard to bring a change. Besides, the project director did not seem capable enough to bridge the gap between those two parties whereas that was his main responsibility. I was trying to help them understand why it is useless to find weaknesses of each other while all they could do is conduct some meetings to talk about the problems that they think they have with each other. After all, it is always possible to figure out a solution if both of them are willing to talk to each other without the presence of a third party. Because, it seemed like they were present there together only because they knew [a foreigner] was visiting and they were having disputes because they hadn't talked to each other for a long time and both the parties didn't know what the other party was doing. Both of them had valid opinions that could not be contradicted, but the main problem was the lack of communication that existed between them. [As interpreter], I seemed to be a mediator between the two parties. But it was a nice experience in that I learnt a lot from that three hours long discussion.

Bungamati Rural Information Technology Center (BITC). Bungamati is a village located about two hours from downtown Kathmandu. The majority of people earn their livelihoods through agriculture and woodcarving. There are many castes in Bungamati, although most people speak Newari.   The entire community is united by their mutual worship at the Rato Machindra Nath, a historic temple named for an important goddess.

The Bungamati Information Technology Center (BITC) is a public private partnership (PPP) established in 2004 in a spare room of a community school.   BITC was jointly initiated by several stakeholders: the Government of Nepal's High Level Commission for Information Technology (HLCIT); Nepal's Ministry of Environment, Science & Technology; the United Nations Development Program (UNDP)'s ICT for Development Project; and the Cooperative Society of Bungamati. BITC was initialized in order to make informational technology (IT) accessible to communities living at the bottom level and to help villagers use IT to improve access to knowledge related to health and income-generating activities, particularly agriculture. There are four computers, one digital camera, and an intermittent Internet connection in this center.

 The BITC has been providing information services to the community members, students, and organizations at a *reasonable cost* (which is less than for-profit cyber-cafes or other training institutes in Kathmandu). Some of these services include: email, Internet, facsimile, telephone, computer classes, and computer laboratory teaching for the primary school. The BITC was accredited to provide computer training based on the curriculum of the Microsoft Unlimited Potential Program. BITC has produced wall magazines to attract villagers to the BITC. They

have emphasized a focus on the following content areas: environment, health, enterprise, culture and drama.

Urbashi Thapa has served as the BITC Program Manager since its inception in 2004. Although she was full-time for the first 3 years, she is now supporting the center as a volunteer part-time. She is also working on a BA in Population and Environment at Tribhuvan University, Patan Campus. She has training in both computer hardware and software and has trained many trainers who have worked at BITC. She is the liaison between BITC and Tri-Ratna Co-operative Secondary School, and she teaches computer to youth after school hours. Urbashi talked about the ways that the BITC opened up opportunities for accessing knowledge.

> URBASHI: I think our tele-center is very important for the community because it provides good information about agriculture, health and other topics. Community members, old and young, also come here to use email, Internet, fax, ISTD (long-distance telephone) and computer desktop services. In addition, our Bungamati tele-center also provides daily market prices for farmers of agricultural products, which are downloaded from a government webpage. This allows our local farmers to continue to be competitive in the market.

Surya Laxmi Tuladhar is the Assistant Manager and has been working in the BITC since 2008. She is also a college student working toward a Bachelor of Business Administration in Kathmandu. She spoke about the ways that she helped people in Bungamati to access information and the personal reward for serving others.

> SURYA: I think this tele-center is a necessary part of our community as a way to provide access to information, as well as a platform to perform community service. As part of our work, we also volunteer to work with older villagers in our community, visiting them and organizing field trips to important temples around Nepal. Even though we are very tired at the end of the day, it is worth it to see their happiness. I have made many new friends through my work in this center. I want to be a businesswoman in Nepal. Before, girls could not go to school or do these things like the men. But, even though I am a girl, I am playing basketball, volleyball, badminton, dancing, and singing. The tele-center will help me to know how to visit new places and make more friends.

Amathi Rudabasi, the leader of the community school where the computers are located, spoke about the ways that ICT has impacted access to information for the community school and the entire Bungamati Village.

AMATHI: Community-based education is more sustainable and more educational than the government schools. Introducing ICT, especially computers, into our community school makes learning more educational because we can learn more things beyond just our Nepal. After school-hours, those who use the computers treat this resource more like a cyber-café and the computers are often misused with gaming and music. But, really, such strong support for the computers came from the local community through an awareness program.

INTERVIEWER: What do the local villagers understand is the purpose of the computers?

AMATHI: People just believe that computers will make open doors for their children. Today, more villagers are coming here to find information or to send information. Many parents here [in Bungamati] feel that the school-going children should receive priority for ICT training, even though they themselves are illiterate or do not know what a computer is for. Perhaps more people would be involved in after-school activities if they knew better ways to find the content here that is relevant to their interests. We need content that addresses the needs of the everyday people living here in our community. Right now, most of our trainings and our support are generic. The main goal of this center is that educational technology should lead the program of the school, so we have focused on the Microsoft content. But, that is not enough. We still need content to benefit the local community.

INTERVIEWER: Is it possible that you could help to create that content for Bungamati?

AMATHI: Yes, we believe it is possible to create content related to indigenous knowledge and to share that elder knowledge through Word document or mp3 recording or digital photos. But, right now, we have need for computers that are fixed (3 out of the 6 are broken)—as the number of participants is increasing, there are not enough resources. We hope that we can raise funds for a scanner, projector and a color printer. With a scanner, we could create more income-generating activities, such as making ID cards and also making it possible for woodcarvers to share designs. With a projector, we can organize more conferences and do some awareness-raising and also show movies at our center. Without more funds and resources, we are limited in our abilities to do more.

INTERVIEWER: Are there things you do without the computers to share knowledge?

AMATHI: Oh, yes, there are other things we are doing from long since. We have focused our efforts in well-furnishing a library room with wide collection of books, magazines and newspapers. Mostly Nepali persons are living in villages and the majority of population of the country depends directly on the use of village resources. Villages are important source of water, food products, hydro-electricity, timber and mineral resources for their livelihood and well being. Despite all these valuable resources, villages have still remained poor and are giving little attention in the development agenda. Bungamati and our neighbor villages are experiencing the same as an average village of the country does. For this reason, it is so important that we build a collection of books and social activities. We also are trying to build an eclectic selection of activities for interaction with local community and other people from around the world [through] international volunteering services.

All of the learners and community members in the center commented on the importance of having the BITC located within the community school. They agreed that it created more awareness of ICT and it also led to a dynamic of ownership by the local community.

Maskichaab Community Center. This village is very rural and is a 9-hour journey from downtown Kathmandu. It is a three-hour trek one-way to the nearest semi-urban market in Gorkha Bazaar. Until last year, Maskichaab has not been accessible by road. Through community cooperation, they built an agricultural access road (albeit rough and impassable during rainy season) in order to haul their produce from their mountainous fields to semi-urban markets. The primary school is a 30-minute walk one-way on rugged trails and the secondary school is a 3-hour walk one-way over several mountains to Gorkha.

The community center was built in 2000 for hosting village meetings and non-formal education (NFE) activities, including: female literacy classes, health trainings, and village cooperative meetings (all members of the village are involved in mandarin orange farming). The community takes pride in their community center because they built it by themselves with their own community resources, even though it is a stick-stone-and-dung community center (the common building techniques for these high mountain areas).

There has only been limited support in this community by NGOs; most of what happens in this village is due to their own efforts. Many of the youth in Maskichaab have learned about the Gokha YMRC and have attended trainings there. These youth have returned and told their own community members about the opportunities to access information through ICT.

Deepak Thapa and Ram Thapa are two youth volunteers dedicated to content collection through push and pull mechanisms. They spoke about collecting, creating, and disseminating content.

INTERVIEWER: In what formats do you share content with these villagers?

DEEPAK: Most of the ways that we share information here in Maskichaab is through talking. We gather in different persons' home or under that big Banyan tree there and we sit to discuss important matters and new information for our lives. Although the elders are wise, most of them never learned writing and reading. Even I am the first person from my family to go to the school. Now, my father, my family, and the whole of my village are looking to me to bring the benefit of knowledge home to Maskichaab.

INTERVIEWER: What benefit do they believe you can bring them?

DEEPAK: Mostly, people hope I can share information that will improve their livelihoods. We hope that computers will help get more information to our village. We now have mobile phones and many people get information through their mobiles. But this is only limited and mostly used for small talking. For some time, we have known about computers … they have had computers in Pokhara since ten years before. Some of those [in the village] who have left home for work have returned to talk of the computers. So, my cousin, Ram, and I started going to the Gorkha center to learn more about the computer training. We have learned nicely there. Now, we are interested to help our own village with this knowledge and to make our community center stronger. More people can access that information for themselves if we have a center near to our village. Many people cannot leave their fields or their animals to trek into Gorkha themselves. They will gain more benefit if they can access good knowledge here close by to our village.

INTERVIEWER: What kinds of content are people [from Maskichaab] interested in?

RAM: A major interest for villagers in Maskichaab is e-commerce in order to market their mandarin oranges internationally. Even though many of the villagers do not know how the computer works or what e-commerce is, they have heard from those who have

migrated for work that e-commerce can eliminate the cheating from the traders who come to our village. We have found that one orange that we sell for 2 rupees to the trader will be sold in Kathmandu for up to 20 rupees. If we could find a different market, maybe we can sell these oranges internationally.

INTERVIEWER: What other information do people seek?

DEEPAK: Health is a concern because we are so distant from the local health post. Also, there are no jobs for youth here, even though we youth have got the SLC [School Leaving Certificate]. So, the youth are feeling bored and there is a lot of gambling, getting into trouble, as well as migration to areas where there is technology. Having a computer [in Maskichaab] might be a way to keep youth in the village and help them do other work or find other information and then they [the youth] can still provide help with family farms.

INTERVIEWER: You mentioned earlier that the electricity lines have not reached your village and will not be here for at least six more months … why do you feel you need a computer before then?

DEEPAK: No, there are no electricity or phone lines to this community. However, several members of the community promised to donate their own solar panels to this community center if knowledge could be accessed here through a computer. We spend so much time trekking to Gorkha, or paying bus fare for long journeys to Pokhara or Kathmandu or Janakpur. We could reduce this time waste if we have access here in our village.

INTERVIEWER: Would the computers be used in the community center or in the school?

RAM: We have talked much about this. Many favor the community center, but there is no way to secure the computers within the community center in its current condition. You see, the community center is not well-built and wind and rain pass through these wooden slats. So, yes, there is a fear that technologies would get ruined during the monsoons if the structure is not improved first. But, the primary school is a thirty minute walk one-way. Villagers would prefer to have the computer nearer so they could access information or send information on a daily basis.

DEEPAK: We have a strong interest to manage activities in our community center since many just completed an adult literacy class that was participated in by many of the domestic housewives near the community center. Some other community members have been trekking to Gorkha to get training and information at the YMRC there and they have put together a plan to model our community center off the organizational structure and design of that center.

INTERVIEWER: In what ways do you customize the information that you get from Gorkha?

RAM: We write information on paper or we print it out on sheets. We have before shared audio files through our phones and we made some CD-Rom files one time but the player of one villager is now broken. We have been talking for sometime with our community and in the surrounding communities. We now have 45 members who are interested to help us start an ICT and knowledge center. With the help of these members they have utilized all the resources they have to help with education and informing activities in the community. Giving a computer would only further help us in this effort. We have also discussed about equity and who would be allowed to use the computer. We are sure that we will give everyone that chance, even the elders and the women.

We talked with community members in front of the community center and held a group meeting inside the center. When I asked who would like to learn to use the computer almost everybody in the room raised their hands. Even a very elderly woman in the front raised both of her hands. When the discussion turned to the topic of responsibility and about the risk of potential theft if they had a laptop instead of a computer, the leader of the Village Development Committee (VDC) talked for some time with the group about this issue. After a long period of time, he commented that there would be no problems because the villagers had an idea how to prevent theft and that they will gladly take this responsibility in exchange for a computer.

There was a great deal of energy and excitement that was present in this room. People seemed to respect one another's comments. They all seemed to be related (most of them had the last name of Thapa) and they interacted very friendly as if they were family. At the very end of our meeting, Raj Thapa, the literacy teacher, came to speak to us.

RAJ: We are very much interested in the computer for Maskichaab. This will provide much opportunity to our village. I also know that the computer won't change our lives but that it could be very beneficial to learn more information and to share knowledge. Radios help us get information, but it is not specific to our community. In some places they do community radio, but we don't have that yet. When we first got solar power here in Maskichaab, there were some people who worried.   But, even though electricity brings a change, it has brought benefit to many. Many people gather at nighttime for

television broadcasts using the solar [power]. You are from America, as we are from Maskichaab, but we are just people and you are just people, but you don't have animals living in your home and maybe one day we can be like you and have more opportunity to go and do other things.

In summary, the centers grouped in this second category represented a medium degree of localization activities. Gorkha, Bungamati, and Maskichaab centers were placed in this category because the respective knowledge-workers and content managers feel that they have limited awareness and ability to engage in content localization. It appears that, after addressing some of the obstacles in the way of knowledge-workers, content localization could be improved or changed. Knowledge-workers feel that their existing skills and abilities provide a firm foundation from which to build in order that they may more effectively support learners to solve their own problems.

Theme 4.3 Some sites manifest a low degree of localization. Centers grouped in this category are those supported by knowledge-workers and content managers who feel that they have limited awareness of localization activities. Based on their own perceptions of localization, it appears that there is little evidence of competency for knowledge-workers to respond to learners' interests and needs in order that learners may solve problems.

Ramkot Community Center. Ramkot is a two-hour drive from downtown Kathmandu. It is at the top of a very steep, mountainous road. The nonformal education center is located in one room of the local Village Development Committee (VDC) and has received support from World Vision International (WVI), an International NGO. Most of the villagers who come to this area trek by foot for several hours; some of them can ride by vehicle for part of the way. Literacy and vocational training have been provided through this center free of charge, through international donors.

World Vision supports NFE and also youth clubs to raise awareness on providing a supportive education environment for children at home. They also address the problems related to creating a culture of literacy at home, where there is less support from parents and guardians. When our research team arrived at Ramkot, we were greeted from NFE teachers and formal teachers from the community. We discussed teaching strategies and how the teachers customize curricula and content for the needs of their learners. Raju Shakya and ShaviHari Khanal, two Ramkot VDC Representatives, led our discussion and brokered the conversation to 15 knowledge-workers.

INTERVIEWER: Who are the people who come to this community learning center?

RAJU: The people who are coming here are mostly those who are part of the literacy class. Maybe they will bring other family members, too. Sometimes people come here to get government forms or to inquire about certain government information, or other information regarding local resources.

INTERVIEWER: Do you have a volunteer youth club that helps in responding to community interests or that mobilizes villagers for certain awareness projects or to share information and knowledge with other members of the village?

RAJU: No, not yet. We are interested to involve youth, but right now we just have one paid staff person who manages our center. We do not have many people coming to our center except when we have an NGO-sponsored event, like the literacy classes.

INTERVIEWER: Do you have other resources here [at the center] that people can come to use when they are in search of information (like a computer or telephone or other ICT resources)?

RAJU: We do have one computer and a telephone line. But, until now we have not allowed anyone to use it other than the center manager. He does not have much experience with ICTs. We believe it is important to help our villagers to begin using ICTs. But, until now, we are not sure how to engage the community in such activities.

INTERVIEWER: What about for the teachers here, do they find a need to localize the content used to teach in your area?

SHAVI HARI: Actually, we do not customize content here. We are only using the government curriculum and teaching that the best we can. The district government education officer (DEO) has told us that we must strictly follow that curriculum, so we do try. We have had a problem with teacher strikes because of no pay. Sometimes the education suffers here because of school closure. We consider it a good thing if there is a teacher in the classroom. We have not provided training or support for content modifications.

INTERVIEWER: Do you find that there are some lessons in the government curriculum that are not suitable for the villagers here in Ramkot?

SHAVI HARI: Yes, in the manuals that come from Kathmandu, there is always representation of Hindu people and in many cases you find the stories of the people in the Terai (plains area). So, we often skip those parts of the lesson, even if the message is important because we people here are mountain people and our lives are quite different than theirs.

INTERVIEWER: Are there any other techniques you can use to make the content relevant to villagers' lives, perhaps other formats like verbal, text, or audio?

SHAVI HARI (After taking inventory from the NFE/formal teachers in the room): I have asked the teachers this question and they say that they unanimously agree that this is something that will benefit learning and then they promised that they would start to localize in the future.

INTERVIEWER: Is there a reason that they don't customize content right now?

RAJU (After taking inventory from the NFE/formal teachers in the room): Some of the concerns about doing these localization activities are tied to authority issues. They are wondering questions like, "Do I have permission to change something for the learners I teach?" Some other concerns expressed by some of the teachers were tied to ability issues. They said things like, "I'm not an expert on this subject; I don't know how to improve it for the needs of those I teach."

SHAVI HARI: The Nepalese curriculum does not allow teachers to make a practical approach in learning. Students are required to pass the final exam that is conducted once a year and that qualifies them for the next class. So, teachers only focus their teaching to that final exam. But, students prefer skipping classes or not paying attention in the classes for eleven months. And they devote the last and final month to prepare for the final exam. This does not prepare them enough to face the outside academic world that their classes should prepare them for.

Even though the research team tried to create opportunities for the respondents to speak about their own techniques or approaches for localizing content, we felt like it was very hard to get them to open up. Although there may be some ways that they incorporate local packaging for the content they share, we were not able to ask the question in a way that allowed them to tell us. It may also be possible that they genuinely do not localize content for the learners they teach. Shrutee, a Nepalese researcher from Kathmandu, provided much of the translation into English and recorded the following details of this site visit to Ramkot in her personal field notes.

> SHRUTEE: Because Tiffany is a foreigner conducting research in Nepal, when she started asking several questions to analyze where [the Ramkot] community stands with regard to content strategies, they started answering questions depending on what [they thought] she wanted to hear from them and not on what the truth is. They kept saying that they would do what she talked about regarding localization. But, she was not trying to tell them to do anything. They only thought she must want something from them, not that she wanted to learn from them.
>
> [This] triggered [an idea in] me as one of the reasons why Nepal could not progress, because I connected their behavior with the behavior of our politicians who go on lots of foreign visits to meet with other diplomats and maybe they give a wrong data about our country. They might have prepared something that the other party wants to hear than what the truth really is.
>
> A challenge in this Nepalese context is that, if someone wants to train a particular group of people, they should pay certain amount of money not just to the trainers but also to the trainees as an incentive. Trainees expect themselves to get paid because all those thousands of NGOs and INGOs who are managed by foreign donors started that trend to attract more people and now it has become a custom.
>
> The problem I faced after our visit to their center was getting phone calls almost everyday regarding what Tiffany is going to do for their community. I tried a lot of times to tell them that we are only researchers. If we learn about a genuine problem of a community, we will present it to other donors and help to collect capital and other resources. However, we explained that we would not just step into a community and give out computers or other physical materials. I explained that we were here to find out what is happening in their locality and to learn from them.
>
> Instead, these people told me "What's the use of the online materials if [we] don't have computers for our community to use?" And, so, I ended up thinking that a person can

provide food for the hungry people but might not feed them with their own hands. If other groups are already willing to share what they have [open educational resources], then may be it is [the local people's] job to figure out a way to buy one or two computers for their own center. If they need help figuring out a way to find money to buy them, many people could have helped. But, expecting Tiffany or any other foreigners to just come and give them 'things' is not going to lead them towards development. They must make some effort themselves to connect to that content. So much knowledge is already there for them and, if they work together, they can improve their village.

Pelakot Galyang Community Center. Pelakot is a small village that is 14 hours from downtown Kathmandu. The travel time to Pelakot is 12 hours by way of Pokhara due to the rugged terrain and poor road. From there, it is a one-hour hike up the mountain to Pelakot. The closest semi-urban village is Galyang. Pelakot is about two hours walking distance from Galyang (the semi-urban hub). From Pelakot, it takes around another one-hour hike uphill to the Ward Community Center.

The Pelakot Community Center is a mud-stick-and-dung structure (which is common for buildings in this region). We had a formal meeting and focus group discussion outside of the center since more than 40 villagers wanted to meet with us and the center could only hold 20 people. Nonformal education activities take place in the center or outside under a shady Pipal tree. This center has been started and has continued to be supported by the local community. Villagers who seek additional information using ICT have relied on services provided through a local computer institute that is a 20-minute walk from the Pelakot Community Center. There is also one computer in the primary school that is near the community center.

We were greeted by an elder, Pal Krishna Pandey, who is from Pelakot and lives at the topmost house at the top of Pelakot Himal (mountain). He is well-respected in the village because he is well-educated. All of his five children have gotten the *SLC* (School Leaving Certificate) and they are all living in other (more-urban) areas for employment or further

studying. One of his sons, Tara Pandey, is currently pursuing a Masters of Electrical Engineering at BYU, and was one of the three Nepalese researchers on our team.

When Pal Krishna met us, he was fully garbed in traditional attire with the typical Nepali hat that elders wear. In his hand was a cell phone and he finished his call before shaking my hand (see his photo in Appendix G). This modern piece of technology caught me so off-guard in the midst of the mud houses and the panorama of rice terraces. It was the entrypoint for dialogue that soon involved all of the 40 villagers who had gathered to talk about nonformal education (NFE) and access to knowledge in rural areas.

INTERVIEWER: Why do you carry a cell phone?

PAL KRISHNA: Because, today is an information world. I carry this in order to connect with friends and family. Mobile phones are useful. We can exchange information much easier with this phone and we can increase opportunity from even this place Pelakot. [Mobile phones] are an affordable way to connect to information and knowledge.

INTERVIEWER: What does it cost you to use that phone?

PAL KRISHNA: Texting is only 1 rupee per text message (a bit more than a penny; approximately $0.014). Phone calls are 3 rupees per minute for inter-network and 5 rupees per minute for different networks. Landlines are more expensive these days in Nepal… I do 4 to 5 text messages per day on average.

INTERVIEWER: What is the response of your community when you, an elder person, are using this modern technology?

PAL KRISHNA: Because of our rural situation, we are eager to find any way to make our lives easier. We used to spend much time in transit to get to a telephone post or to find out news of our nation or of the world. But, now we can connect to so much more information with much less effort. People see the benefit of this mobile phone. So, nowadays, more and more people are using [these devices] in our remote communities. We even have computers here in our village.

INTERVIEWER: What benefit do you see from the computers in Galyang?

By now, the conversation I was having with Bal Krishna was being eavesdropped by a crowd of other villagers. I asked this question and then looked around at others in the group to see if any of them had comments. Tara Pandey, Sanjeep K.C. and Shrutee Shrestha were all with me at the time and were able to translate and record some side conversations. One of the community trainers of ICT, Kamal Bisal, responded to this question with enthusiasm.

> KAMAL: Nowadays, computers are everywhere. It is increasingly necessary to know how to use computers if you want to get a good job. Computers can help us to find information to help us get better jobs. Most people will not be able to make their livelihood here in Pelakot. They will have to rely on employment from more urban areas like Pokhara or Kathmandu. Some of our relatives in this village have already gone overseas to Dubai, U.A.E. and to the States.

> INTERVIEWER: Who are the people that come to the computer training center?

> KAMAL: It was in 2009 when we started a computer training center in this village. At that time, most people didn't know about cyber cafés. In the beginning, the only people who came to find information through the computer center were students who have studied away from Galyang. The main reason that people came to the center was to do email, to connect with friends and family, and to find out the news regarding the Maoist situation. But, then people start to find out about websites where there are crop prices, weather postings, world news, and also an opportunity for tele-medicine. This made more people interested because they can find much information through the ICT resources. Now there is more awareness about ICT because of the mobile phones.

We met with all the members of the community who had gathered for a large focus group discussion. We found that certain key people dominated the conversation: Gita Pandey, Bal Krishna Pandey, and Tara Pandey. I found out that they were among the most respected people in the community and that is why the others deferred comments in order to hear the opinions of the respected leaders. We talked with the villagers about many issues of nonformal education, accessing information, and the difficulties tied to sustainability.

> INTERVIEWER: What are some of the central concerns that this community faces?

PAL KRISHNA: The greatest obstacle we face right now is accessing clean drinking water. Since we live in such mountainous terrain, it is very difficult to get water up to houses from down in the valleys where the rivers flow. We have combined our support to build some taps in these communities, but there are still many people who don't have access to good water. Many people are spending four hours minimum each day to collect water.

INTERVIEWER: Is there certain information that you seek in this village that you cannot find here?

PAL KRISHNA: We are interested in information that is related to improving health and to improving agriculture. Maybe you can help us to find information in order to write some funding proposals. We are interested to find some support to build more taps and to establish a health post nearer to our village.

INTERVIEWER: Once information is found at the training center or in the community center, how do trainers modify that content so it is understood by villagers?

KAMAL: We have not done many things like that. In the community center the villagers have learned some basic literacy skills. Some of them have come to our computer training center in order to set up email and to learn basic typing skills. So far, most people in this village do not know that the computer center can connect them to valuable information that can help them solve problems.

INTERVIEWER: Have you done any awareness-raising activities to teach people about ICT?

KAMAL: No, we haven't. The only way people are learning the value of ICT is by watching others who benefit. Many people look to the example of Bal Krishna Pandey. As he is open to new technologies and also using the mobile phone, he is the one creating awareness. I believe we could do more to build understanding of the possibilities of ICT. Our problem in this region is the time we spend getting from one settlement to another settlement. But, we can do that. If we can help villagers find good knowledge and content in our computer center, maybe it will improve interest. We can work with the literacy facilitator to do this. Right now, we have one computer in a primary school where the local trainers would train other students after the school ends. As these students learn the benefit of ICT and access to information, they will tell their parents and family members. I believe we will see the big change in this new generation of youth. They are very much interested in the computers and the knowledge. They share ideas much more and even the girls in this village are getting more priority to go to school than in the past times.

In summary, centers grouped in this third category represented a low degree of localization activities. These centers were placed in this category because the respective knowledge-workers and content managers feel that they have limited awareness and ability to engage in content localization. According to them, something would have to be improved or changed in order for these knowledge-workers to respond to learners' interests and needs in order that learners may solve problems.

Question 3. What strategies can improve localization of content in Himalayan community centers of Nepal?

During the course of research, many respondents shared the obstacles they face in order to localize content for the learners they serve. Most of the time, knowledge-workers also had suggestions or insights as to how they felt they could possibly resolve these challenges. This question was focused on proactive possibilities and, instead of only focusing on the problems, the goal was to provide an opportunity to meta-evaluate their own experiences and possibly shed new light regarding ways to move forward.

The first part of this section answered Research Questions 1 and 2 by sharing Themes 1-4 in response to what extent and how knowledge-workers localize. Themes 5-12 respond to Research Question 3 and are framed within the meta-theme of strategies to improve content localization in community centers of Nepal.

Meta-Theme 5. Build capacity of knowledge-workers. A central issue raised by all stakeholders is the importance to build capacity. This is tied to building capacity not only in

knowledge-workers, but also government, NGOs and stakeholders throughout the arenas of nonformal education, ICT and OER.

Building capacity is a buzzword in development circles. On the Development Gateway's "Zunia Knowledge Exchange," an online OER portal for developing countries, a recent search (28 January, 2011) on "capacity building" yielded 28,706 matches. There is no doubt that capacity building is a central component needed to advance development agendas across the globe. But, what is meant by the term *capacity building?* And, what are some practical strategies to achieve this goal?

Capacity building is much more than training and may include the following: (1) human resource development; (2) organizational development; and (3) institutional and legal framework development, making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance their capacities (UCBN, 2011). Indeed, capacity building takes place at several levels. In this study, respondents commented on building capacity in all of these levels of human, organizational and institutional development in Nepal.

I will first focus on themes related to building capacity of knowledge-workers and will then address themes related to organizational and institutional development in separate sections (including government, NGOs and community groups).

Theme 5.1 Create awareness. An important suggestion given as a key component of building capacity is to first build self-awareness within knowledge workers of their own ability and the existing strategies to engage in content localization activities. At the core of human resource development, awareness-raising is the process of equipping individuals with the understanding, skills and ability to access information, knowledge and training that enables them

to perform effectively (UCBN, 2011). This is essential to develop an improved sense of what is possible and self-efficacy to achieve those aims.

Awareness-raising also includes the process of establishing a sense of possibilities and alternative ways that those possibilities may be achieved. Several respondents indicated that it might be necessary to first dispel negative and false beliefs about localization in order to create deeper understanding and interest to engage in knowledge-sharing activities. Shrutee, a Nepalese interviewer and interpreter for the research team, summarized it this way:

> SHRUTEE: People don't think they can change content. When Tiffany first talked with them [knowledge-workers] about *localization*, everyone got confused. Even after she explained about making lessons better for learner's needs, still they were not able to figure out why she was talking about this. Later, Tara, Sanjeep and I [three Nepalese members of the research team] discussed that part of the reason for people not being able to understand what Tiffany meant by modifying the content is that no one thinks they are smart enough to change or modify what is written in books, even if it is a book of a first grader. It's just opposite of how teachers teach in Nepalese schools. In Nepal, the books and the teacher are never wrong. Even if the book or the teacher is wrong, the student has to keep quiet. So they were surprised at why Tiffany asked them how they are modifying the content or improving it for the learners to learn better. Later, when we described how Nepal is so diverse and a Newari person in Kathmandu might not understand a Mugali person in Far West Nepal, then they agreed that localization is necessary and they said that, yes, they do think content in books has to be modified to meet the needs of different people in different villages of Nepal.

After participating in several interviews and following the first focus group discussion, Tara, another Nepalese interviewer and interpreter, made the following observation:

> TARA: We held our first focus group discussion on Saturday. We arranged for different stakeholders to all gather in one venue where they could discuss freely about their thoughts and opinions. So many various people came with so many different backgrounds – people from the rural villages and also government and UN people. Even though they were all Nepalese, they seemed to have so little in common. I, myself, was born and raised in a Nepalese village; but I had never been with people at so many levels of society. They all participated in the discussion together, but the people with more professional experience and formal learning did more of the talking. At first, many people were skeptical about the new concept of open content being used for development and knowledge in rural areas. However, after they started to understand why we were

there, they seem to like discussing this new idea of localizing - that was totally new in the Nepalese context. Even though people don't feel like they are experts, if they are given the chance to share their opinions and ideas, they have good insights. When we worked in small groups to talk about localizing a manual, many people talked a lot, even people from the lower castes and from [backgrounds with] less education. Then they shared ideas in front of the group and you could see that they felt strongly about localizing content even though before this time they may have never talked about it.

Theme 5.2 Establish ownership. In general, it appeared that most people believe that capacity-building is *something* that *someone* else should be doing *somewhere*. Everyone agreed that capacity building was necessary; few people felt that it was their own responsibility. Manohar Bhattarai, the Vice-Chair for the Nepalese Government's High Level Commission for Information Technology discussed this challenge of ownership:

> MANOHAR: Whose responsibility is localization? Local people are best suited to localize; but, from what we can tell, they are often less willing to put in the effort to localize. It could be a capacity issue? Perhaps [knowledge-workers] need more training in this area? But, who should provide this? The government may not be the best prepared to take this on. We need to build capacity at the government level as well.

At the opposite end of the stakeholder spectrum from Manohar is Mira Kunwar, a knowledge-worker in the Gorkha Youth-Managed Resource Center (YMRC). She shared her insights on capacity building:

> MIRA: We need to create enough leaders to achieve localization of materials. We have some ideas in our center, but we do not have permission by the leaders to change content. You know that translation alone is not sufficient. Many people complain about the pictures in these [government] manuals and they protest that there should be enough women in the pictures. There also should be more representation of rural people's livelihoods. Someone needs to take responsibility to change this.

 The Nepalese Government's Report (2008) on Adult Learning and Education (ALE) indicated that "very few of the [existing educational] materials cover indigenous knowledge and wisdom. This situation demands that there be assertive measures for the development of literacy

materials on indigenous knowledge and wisdom" (ALE, 2008, 10). Unfortunately, those

measures that are demanded for localizing materials are not expounded upon.

> MANOHAR: We go round and round about this issue of who should localize and how to perpetuate it. There are few financial resources in place to facilitate this, so we face the dilemma of "buy-in." Who should steer this effort? If it comes from our direction, few people will jump on board without sufficient incentives.

Some people interviewed during this research argued that building capacity for content

localization should focus primarily on the knowledge-workers since they are the closest to the

learners and are most aware of local needs. Building capacity in this context refers to both

improving content customization and bolstering ability to use ICT resources that facilitate

distribution of content.

Theme 5.3 Provide continual training. As a trainer of trainers for his community-

learning center, Tuladhar shared insight on how to reach the knowledge-workers:

> TULADHAR: There are many roles of a facilitator. In order to make content right for the learners, the content must address: 1) the right subject; 2) the right format of material; and 3) the right role of the teacher to share that knowledge. What we've found is that facilitators initially need training, but then they will also need refresher courses to keep them updated on new strategies. Continual training keeps their momentum strong and that leads to better support for the learners.

Many practitioners commented on the benefit of exchanging ideas with one another. The

Youth Summit for managers of community centers has provided a forum for knowledge-workers

to discuss their challenges and their strategies for collecting, customizing, and disseminating

content in their own localities. Ramita explained:

> RAMITA: I've helped to plan five Youth Summits now. You know, the feeling is very good when we youth gather. We learn so much in just a two-day period. It is different when we meet in our non-formal setting and share to each other. Somehow we feel more free and we feel like these people are really our family because they are understanding our daily troubles and passions by our shared work in the information centers. We have maintained our friendships outside of the gatherings and, often, we talk on Facebook or

chat rooms. We can learn a lot from each other and we can also share what we know with the others.

Throughout most of the data collection events, participants spoke about the importance of building capacity of practitioners to engage in localization activities. Some of the salient ingredients identified to bolster ability in order to customize content for local groups include: (1) to cultivate awareness of existing practices and new opportunities to localize; (2) to create ownership of the responsibility to localize; and (3) to effect perpetual training opportunities for knowledge-workers.

Theme 5.4 Identify appropriate role of government. Besides building capacity of knowledge-workers, it is essential to also focus on developing capacity of an institutional and legal framework for localizing content. This includes making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance their ability to support improvements in nonformal education at a grassroots level.

> MANOHAR: We in the federal government need to address issues of policy, motivation, resources, institutional buy-in, and sustainable mechanisms for keeping content flowing. Whatever we do in the government, it is still centralized (not localized) to some degree. Even still, we are trying to get more localized materials to the telecenters. But, we do struggle to get the ministries of education and health etc. to move toward digitization of content. There is not enough awareness of the benefit for moving in this direction, I suppose. We need sectoral agencies to contribute existing content. We need to help them recognize that they are geared toward creating and sharing content through open formats. Each sector needs an OER champion—like the Ministry of Health, Ministry of Education, and the Ministry of Agriculture.

There was unanimous agreement that the government ministries are not yet prepared to take up the work of localizing and sharing content openly. Krishna Pandey is a government employee working in the newly-created Open Technologies Resource Center (OTRC), launched in 2009 by HLCIT. He had the following insights:

KRISHNA: So, for this [accessing content by rural villagers], the first and foremost thing is to make a strong team and we even need to knock the door of various ministries like Ministry of Health and Population and ask them if they will provide us basic health contents or other useful content and knowledge. We can collect various materials from them that may be hard copy or digital content and we can modify them as per our need and necessity and then only we can think of localizing those contents and getting them out to people who really need them.

There is a question as to what role the various ministries should have with regard to content activities. If they are less capable than other stakeholders, then the ministries could cause a lag instead of a leap toward progress.

MANOHAR: We can advance localization at a national level, but is it appropriate for the government to do this task? Is it better if this takes place at the ministry level or by NGOs or in villages?

In concert with this issue of creating awareness by government sectors is building the capacity of employees in those sectors to actually do the work related to digitizing, uploading, and archiving content. A recent report (2009) conducted by the International Development Research Centre (IDRC) investigated ICT capacities in Nepal. This report, together with a study conducted by the Swaabhimaan Foundation, indicates that the majority of ICT personnel in Nepal are in the Kathmandu Valley (69%). Still, most ministries and government agencies lack IT human resources to meet technical capacity. There are few ICT-related positions in the civil servant career path, making it difficult to attract technicians to the government sector (IDRC, 2009; Swaabhimaan, 2009).

The ALE report further indicates that:

Different approaches have been adapted to capacitate existing [Adult Learning and Education] human resources. On the job training and sharing is necessary and a more appropriate method of capacitating local practitioners [knowledge-workers]. The content of facilitators training is also based on the same areas that primers are based on [national curricula tailored to dominant groups]. However, even if the facilitators are oriented to use learner-centered methods, they have the pressure of transmitting the knowledge,

information and skill that the curriculum framework demands in a given time period. Thus, [there is a] mismatch between [the] curricular goal and competency of the facilitators. [This gap] needs to be bridged. Moreover, a number of literacy facilitators, supervisors, and mobilizers have been trained and reused. But there is no database of trained human resources. At this point, [a] different network should prepare [a] database of these practitioners and share this among ALE providers.

During the focus group discussion held in the government offices of HLCIT (FGD II, Appendix D), several people commented on the lack of an ICT roadmap or a framework for shaping national policy and cooperation between stakeholders toward an Open Content Agenda.

> KRISHNA: Another reality here in Nepal is the absence of ICT road map. We have been talking about eGovernance, eHealth, eEducation and all that but where shall we fit these eStrategies if we won't first have [an] ICT road map? If there won't be an Internet network functioning across the nation, then content won't work much better if it is only digitized. We must think of other alternatives like offline tools. So, what we can [do is to] use [a] server at a single point [community center] and be making [a] cluster and provide the mesh ends to other remote villages and dump all our materials and content in the server that can be easily accessed by other remote villages. So, this can be [a] best alternative to pave our way forward.

In the wake of a new democracy, the burden on the new government is great in terms of management, capacity-building, and policy-making. Bolstering awareness and capacity of government ministries is essential to establish buy-in toward for the integration of ICT in all public sectors, particularly for galvanizing support from the government ministries for rural educational development in Himalayan villages.

Theme 5.5 Cultivate appropriate NGO Support. Another component to bolster localization of content is by identifying the appropriate role of national non-governmental organizations (NGOs), international NGOs, and bi-lateral donors like USAID. Capacity building in terms of organizational development includes the elaboration of management structures, processes and procedures, not only within organizations but also the management of

relationships between the different organizations and sectors, including: public, private and community players (UCBN, 2011).

Rohit Pradhan is the NonFormal Education Director for World Vision International. He provided an escort for us to visit the Ramkot Community Development Center, an NGO doing work with teachers and non-formal education facilitators in high mountain areas at the end of the Kathmandu Valley. He gave the following insights about working with NGOs to develop and share content:

> ROHIT: If our real purpose is to 'make the people literate,' then we need to devote as much time as they need in order to achieve that end. But, NGOs are not often collaborating to achieve this goal of getting good content into the hands of villagers. Indeed, there is a kind of competition between NGOs for "owning" projects in different villages. This changes the dynamic of poverty alleviation. There are enough poor people to go around, really. What should be a cooperation-based relationship becomes a top-down, donor-driven, us-them dynamic. There are so many needs unmet because the NGOs are not organized in their delivery of resources. An NGO is a business in Nepal and, if you are seeking employment, an NGO is one of the best opportunities to find work.

The NGO world in Nepal is a complex community. There are over 6,000 NGOs doing work in Nepal that are also registered with the government. It is estimated that, in actuality, more than 15,000 NGOs in Nepal are working in various sectors (VNW, 2011). An emphasis from the Government of Nepal (GoN) for the development of the NGO sector creates a favorable environment for the increasing number and growth of these service organizations. However, this high number of NGOs has sometimes resorted in duplicity of efforts and has fostered competitiveness in the arena of development instead of collaboration.

Tourism is the largest industry in Nepal, and the largest source of foreign exchange and revenue (GoN, 2010). The tourist industry is seen as a way to alleviate poverty and achieve greater social equity in the country. As a catalyst of this hope, many people view foreign NGOs

and donors the same as tourists and believe that they are a good source of income for Nepalis. Furthermore, the highest paid citizens of Nepal are those who work for NGOs or international donors. Some leaders of NGOs in Nepal make as much as 7.3 million Rupees per annum (~$100,000) whereas the average salary of a middle-class Nepalese person is around 40,000 Rupees per annum (~ $600 USD per year) (TMUC, 2010).

Today, few people join NGO projects altruistically; when I asked people why they are working in their various capacities with NGOs, the majority of respondents said, "I needed a job and I got hired here" (Ivins, 2010). With this proliferation of NGOs and concern about NGO motives, skepticism has increased regarding NGOs and the integrity of their work.

Others feel that NGOs spend large amounts of money in the wrong places according to their own western biases—prioritizing funding for communities that are close to roads, close to tourist places, and close to air conditioned lodging and restaurants. Instead of the communities most in need receiving support, certain communities receive help by several NGOs repeatedly. The bottom line is this: after all the billions of dollars of aid money that has been sent to Nepal in the past 5 decades, what is there to show for it in terms of development?

A recent article in the November 2010 issue of the *Asia Magazine* was written by Raunak Agarwal, a Nepalese journalist, and was accompanied by Figure 4. The article argues that NGOs in Nepal may be depriving a society of progress by attracting the best talent and skewing the market against entrepreneurs. Aid constitutes 10% of Nepal's GDP and organizations surviving on aid are omnipresent in Nepal (Agarwal, 2010; Bhattarai, 2010). Yet, Nepal remains one of the poorest and least-developed countries in the world, and the limited impact evaluations conducted in Nepal indicate that this dynamic does not seem to be getting any

better with regard to effective distribution and impact of aid (White, 2009; World Bank, 2003).
This local sentiment against NGOs as depicted in the cartoon below (Figure 4) often spills over
to all foreigners who visit Nepal, no matter what their motives are.

Figure 4. Criticism of foreign aid distribution in Nepal.

A member of the research team, Shrutee, observed this dynamic while collecting data for this
study:

> SHRUTEE: The problem I faced after the focus group discussion [FGD I, Appendix D],
> was getting phone calls almost everyday from people asking questions regarding what
> Tiffany is going to do for their community. I tried a lot of times to tell them that Tiffany
> is a network builder and researcher. If she figures out a genuine problem of a
> community, she presents it to persons overseas who can help to collect capital and other
> resources. However, she would not just step into a community and give out computers or
> other physical materials. I also told them that she is already willing to share what she has
> right now: online OER resources which can support and guide teachers and trainers. But,
> this didn't seem to satisfy them. They instead told me, "What's the use of online
> materials if we don't have enough computers?" And, I ended up thinking that a person
> can provide food for the hungry people but might not feed them with their own hands. If
> she is already willing to share what she has, maybe it is their job to figure out a way to
> buy one or two computers. If they need help figuring out a way to find money to buy
> them, we could have helped. But, for them to expect Tiffany or any other foreigners to
> just come and give them 'things' is not going to lead them towards development.

In order to sustain progress toward localized content creation and dissemination, appropriate roles of NGOs and international NGOs need to be identified. Furthermore, it would be ideal for these groups to consecrate content and educational resources to a common pool. Many of these resources that have already been developed were done so with large grants from governmental and nongovernmental organizations in order to benefit rural communities in the first place. If the time and resources utilized by groups and communities to develop these resources could be given back in open formats to the communities from whence they hail, then there would be a substantive body of content placed in reach of communities immediately.

However, after discussing this possibility with leaders from several organizations, their responses echoed each other. Organizations spend hard-earned money developing these educational resources. These learning materials constitute the intellectual capital held by each organization and it is the very catalyst whereby organizations can attract more funding for the projects they are currently working on and that they will work on in the future. If Organization A shares content with Organization B, then the latter organization may use that resource to attract funding that otherwise would go to the former organization. This is one of the major reasons that it is so difficult to foster collaboration instead of cooperation for content sharing in Nepal.

Theme 5.6 Nurture appropriate community involvement. Another important strategy identified for improving localized content creation and dissemination is by identifying the appropriate ways that local communities can take on these responsibilities of content development and dissemination. Although government and NGO leaders recognize the importance of local communities in these processes, very little evidence exists of effective

mechanisms for bottom-up sharing. Seeking out insights of local leaders requires conscientious

planning. Community-based content development is more time-consuming and costly, but the

long-term benefits seem worth the trade-off. Kalpana is a youth manager working in the Gorkha

Youth-Managed Resource Center. She shared her insights on this:

> KALPANA: We have ideas of how we would like to create content for the learners in our center. But, we don't have enough technical resources to do what we would like to do. We need a scanner and we need a printer. Right now we don't have those things and we don't have an Internet connection. The way [this sponsoring NGO] works is that they develop content at headquarters in Kathmandu. Then, they send it out to our district office here in Gorkha in hard-copy formats. Then we receive it and are told to use it. We don't always know if we are using it correctly. There is no way for us to tell them what parts of [the manual] are working and what parts are not relevant. We do not have a free exchange; it is only a top-down management style they are using here.

After visiting several sites, Shrutee commented on the tension she observed between

representatives from the community and from the NGO regarding content localization.

> SHRUTEE: I have seen a live demonstration of why the development work is difficult to implement. The heated debates between two parties [community and NGO] seemed to be only a portion of the frustration between the advisors of the committee and the youths. [This experience] was just an example of why it is hard to bring a CHANGE. Besides, the project director did not seem capable enough to bridge the gap between those two parties whereas that was his main responsibility. I was trying to help them understand why it is useless to find weaknesses of each other while all they could do is conduct some meeting to talk about the problems that they think they have with each other. After all, it is always possible to figure out a solution if both of them are willing to talk to each other without the presence of a third party. Because it seemed like they were present there together only because they knew Tiffany was visiting and they were having disputes because they hadn't talked to each other for a long time and both the parties didn't know what the other party was doing. Both of them had valid opinions that could not be contradicted but the main problem was the lack of communication that existed between them. I seemed to be a mediator between the two parties. But it was a nice experience because I learnt a lot about realities of doing work in Nepal from that three hours long discussion.

 In order to strengthen the local part of localization, NGOs and government organizations

must find better ways to involve local people in the design, creation and dissemination of

localized content focused on the needs of villagers. Much of the evidence collected in this study indicates that this dilemma is not a training issue; it's an organizational and management issue.

Theme 5.7 Establish a central repository for content. Many stakeholders indicated that open content focused on development issues should be collected in a central repository. This would allow a mechanism whereby localized content could be continually evolving and continuously archived for shared use in other villages with similar needs or interests.

The Nepalese Government's Adult Learning and Education (ALE) report (GoN, 2008, p. 23) indicated that:

> Given the heterogeneity of culture, topography and lifestyles across the country, cross-cultural knowledge is also required to make ALE learners know about lives of other people as well as their own. In this context, learners require multiple life skills and knowledge of other communities. Again, the materials are systematized in terms of thematic classification and utilization. But not all learners have access to such materials. This situation demands a materials resource center at the center, district and sub district level to make maximum sharing and utilization.

Another point made by the Nepalese government's ALE (2008) report is that not only content and materials need to be collected at a central repository. Additionally, best practices and innovative ideas for sharing content and building capacity of knowledge-workers to do so at a community level need to be shared through that common clearinghouse.

> Evaluation and research reports of literacy/NFE programs are being produced. But such materials are not available for use by larger audiences. Organizations barely store these reports systematically. This implies that there is a need for a responsible agency at the district and central level. Similarly, various innovative ideas have been practiced. However, they are rarely documented and shared with literacy providers. This situation demands self reported documentation from all providers. Moreover, good practices have evolved out of the context and the innovative abilities of literacy practitioners. This shows that there is a need for a framework to document good practice and [share it] among literacy providers. (GoN, 2008, 24)

Since the creation of the ALE report in 2008, the High Level Commission for Information Technology (HLCIT) established the Open Technologies Resource Center (OTRC) in 2009 to begin addressing these issues. Manohar, the Vice-Chair of HLCIT discussed the challenges the Nepalese government faces to launch these efforts.

> MANOHAR: As the apex governmental body over information technology, we [HLCIT] were handed the task to create a clearinghouse for content. We started the Open Technologies Resource Center (OTRC) in 2009 to begin doing these activities. But, this [OTRC] is only a start for getting good content into the hands of those who need it. We need an interdisciplinary team in order to collect localized content at a central level. It takes a committed, full-time team to accomplish these goals and we have only been given a very small budget to do this initiative. Perhaps it is better that the government merely aggregates localized material from other stakeholders? The government can't seem to localize *enough* for the needs of people on the ground.

During the focus group discussion held at HLCIT (FGD II, Appendix D), stakeholders from government ministries, NGO and INGO groups identified several activities that they feel should be steered by HLCIT. Sanjana, the Program Manager for READ Nepal, summarized the following proposed tasks as being under the umbrella of HLCIT's stewardship:

> SANJANA: Since HLCIT is the highest level of government over ICT, they are the most neutral entity to facilitate content collection and dissemination. HLCIT should be responsible for overseeing or delegating (but not implementing) the following details: overseeing content aggregation; providing incentives for ministries and NGOs to contribute content; building an online portal for Nepali content as well as a physical facility for storing all content; training trainers to access content; aggregating and creating training tools for knowledge-workers; supporting the NGO consortium to collect content; unifying ministry processes of sharing and uploading content; identifying the means of bridging communities with content (especially centers that are off-line); create a content distribution network (mirror site model); build a consortium to contribute to a Nepali content portal; create policy framework for content collection and dissemination; host a regular gathering of NGOs and ministries to discuss and execute content collection strategies; provide regional trainings to knowledge-workers; and develop training tools to use at community center access points.

In response to this list drafted by the stakeholders during our focus group discussion, Judda Gurung, an HLCIT representative commented:

JUDDA: We are committed to doing our best to achieve these goals. We also recognize the importance of this ICT agenda in order to facilitate rural development across Nepal. However, without substantial funding we are limited in our own ability to achieve all these goals. Let us hope that this new government will prioritize this agenda the same as we do by dedicating some funds toward this project.

Indeed, even if there is philosophical acceptance of this agenda for a centralized repository, without the resources and political will to execute the suggested tasks, the government is still hampered in its ability to build the team of players who will respond to the needs of villagers who seek for customized content in rural community centers at the grassroots level.

Theme 5.8 Integrate appropriate technologies. A major issue facing the Government of Nepal (GoN) is the challenge of connectivity across the nation. In the IDRC Country Profile on Nepal (2007), ICT growth is shown during the past five years. Interest in ICT has been landmark in many ways, especially through the proliferation of mobile phones and the development of localized computing through development of NepaLinux (IDRC, 2007).

Another achievement for Nepal has been *VSAT* networking. VSAT stands for "Very Small Aperture Terminal" and refers to receiving/transmitting terminals installed at dispersed sites that connect to a central hub via Satellite using small diameter antenna dishes. VSAT technology is a cost effective solution for users seeking a private communications network that connects a large number of geographically dispersed sites. VSAT networks offer value-added services capable of supporting the Internet, data, LAN, voice-fax communications, and can provide powerful, dependable private and public network communications solutions (World Link, 2011; IDRC, 2007).

Although these recent developments in nationwide connectivity and infrastructure are encouraging, the lack of national connectivity still prevents many Nepalese from reaping the benefits of ICT. Even with these developments, however, there are only 2.46 fixed telephones per 100 inhabitants; only 4.03 mobile phone subscribers per 100 inhabitants; and 0.19 internet users per 100 inhabitants (GoN, 2009).

Krishna, an employee of the Government of Nepal's Open Technology Resource Center (OTRC) explained some particular challenges regarding Internet connectivity in Nepal.

> KRISHNA: Can any of the Internet Service Providers (ISPs) or anybody else in Nepal claim that they have got very good Internet connectivity from east to west or from north to south or between any four to five remote villages of any two remote districts? No, they can't. And, if we don't have that and if we continue to have this issue of connectivity, then also we can expect this very limited Internet to continue giving us problems time and again. So the major and bigger challenge about disseminating content into rural communities is the absence of fast track. It may be better to focus on asynchronous approaches for the time being.

Subir Pradhanang from an NGO focused on developing and disseminating open content, Open Learning Exchange (OLE), echoed Krishna's sentiment:

> SUBIR: Bandwidth is still an issue in most communities where we work. Another factor to consider is load-shedding (the termination of electricity power for extended periods of time). You now, sometimes it feels like it's next to impossible to push content through the Internet no matter how hard we try. This is especially hard due to the ever-growing size of content items.

Indeed, many respondents commented on the challenges presented by Nepal's weak Internet infrastructure. Krishna reported on a positive experience with rural health information through a blend of wireless networking and asynchronous approaches:

> KRISHNA: My working area was Telemedicine. We use to lay out the wireless networking with antenna and other wireless equipment and then look at the demand of the villagers. We use to fix the telemedicine camera either at the community center or at the health post. We have even noticed that, as per the topography of the nation, live video conferencing for providing telemedicine service is relevant, but still not working

for this nation because of our limited bandwidth, poor Internet connectivity, and frequent load-shedding.

But, definitely the store-and-forward method [using asynchronous tools] of telemedicine is very much fruitful. As long as we get the content to villagers, we have found it curative for skin diseases. That is what I have been chatting regularly with tele-dermatologists of Nepal. Sometimes. injecting the technology to the remote villagers will work, but not every time. [The villagers] must realize the importance of technology that is dominating their society.

One of the telemedicine-integrated health service provider (through online software) was taken by me to pilot their system in Gerkhutar Village, Nuwakot District (7 km away from road access). The area is very remote and the 64kbps data speed that was generated by a dial up telephone set. It worked so well in order to download its java applet application and the system was installed and tested.

The tele-dermatologist from Nepal Medical College, Jorpati, Kathmandu checked the symptoms of the patient in the village and was able to diagnose the disease and prescribe the right medicine for the patient. The health software had the various features of checking the symptoms, inserting the images of radiology, Xray, etc, history of the patients, searching patients, selecting doctors with secure log in and many more essential features. I have included this story because the features provided by that software also [reflect] the local content that we have been talking about. So, you can see that, yes, we should go as per the ground reality.

 Despite positive stories like these, there are still many skeptics who wonder whether the

financially-strapped nation of Nepal should make ICT a priority before other development goals.

Tuladhar, a former political science professor at Nepal's national Tribhuvan University explains:

TULADHAR: I am not sure the computers will be successful tools for localization. There are many constraints presented by the computer. Most of the people I work with don't even know how to read or write their own name. It seems there is much we can do if we focus on the basics first – and literacy can be advanced through localized content even in absence of a computer.

 Manohar, the Vice-Chair of HLCIT, attempted to bridge the two poles of this discussion

and suggested that there may be a middle ground that would be good to find:

MANOHAR: It is true that we cannot rely on connectivity. What would be good is if we could develop a content distribution network that can work offline. We could investigate ways to build a cache of content at local hubs with computers connected through LTSP.

LTSP stands for Linux Terminal Server Project, or networked screens surfing off of one main thin client computer containing the content. LTSP is an increasingly popular way for sharing content in centers because this process uses a free and open source software for Linux and allows many people to simultaneously use the same computer. Generally, terminals are low-powered, lack a hard disk, and are viewed as a strategic approach to increasing access to ICT in developing countries, including Nepal.

Besides addressing the ways that connectivity can enhance access to tailored content, Jitendra, an employee of the Open Learning Exchange (OLE) in Nepal, talked about the formats whereby content should be disseminated:

> JITENDRA: There is an NGO video tutorial for fish farming in far western Nepal. [This format] is more effective than written information. Content delivery should not be in text, but video/audio for lower-literate groups. This can be done with an LCD projector and screen. In some cases, communities are using a digital recorder or MP3 player with a cheap pair of speakers. There are many possibilities for conveying the desired message while delivering it in appropriate technological formats according to the user's abilities.

Subir agreed and suggested that it will be good if the online formats can be more user-friendly in order to allow more users to modify or localize content:

> SUBIR: If we really want to involve local people in content editing, the content wiki must ensure WYSIWYG editor at the minimum (What You See Is What You Get, a simplified user-interface for editing wikis). Any further simplification in all areas would be more appreciated [by the less technical people], I am sure.

Krishna Pandey, an employee of HLCIT, through the OTRC, has been communicating with local community centers regarding ICT. He expanded on this issue of appropriate technology:

> KRISHNA: I got the opportunity to go to the western part of the country to Gulmi District [to] the place where my grandfather was born. We had gone there because there were lots of program inaugurations. At the same time, the European Union, with the help of Naulo Ghumti, a local NGO over there, has trained the people for fish farming, dairy

product production, live stock farming, and vegetable production. The villagers have also established a youth information center in their community hall. They have called our team for [an] interaction program regarding the possibility and opportunities of wireless Internet in their land. I was so surprised to see the development in such steep hills where there is no access to proper streets and roads from one village to another village within the district. It appears to me that, if there is local demand, the villagers will find a way to make it happen. In this arena, it seems that we will find success only if the ICT projects are demand-driven. Many of the locals make sacrifices for these projects. As long as we start with technologies that are appropriate to their communities, we can hope that good things will transpire.

Some stakeholders felt that the emphasis should be on creating content for cell phones and PDA's. Subir, Program Manager for OLE Nepal explained:

SUBIR: We should focus on developing high quality courseware for cell phones and low-cost PDA's, especially for the earlier levels of learning. They are widely available and inexpensive compared with other devices. Other tools specifically designed [to increase] learning skills are continually under development.

The Open Learning Exchange (OLE) Nepal has been attempting to develop a viable model for exploring the introduction of ICT for Education in a developing country [like Nepal]. The OLE Nepal is now in its post-second phase of a program involving student-owned laptops. Around 2,500 students of 26 schools in six widely dispersed rural districts of Nepal are now piloting the use of student-owned XO laptops with relevant and localized digital education materials (E-Paath) prepared by OLE Nepal (OLE, 2011). The children as well as teachers are also benefiting from the use of E-Pustakalaya <http://www.pustakalaya.org/>, which is OLE Nepal's education-focused electronic library containing full-text documents, images, videos, audio clips, and software relevant to the teaching-learning process.

OLE Nepal is documenting their process of creating interactive digital content, done in collaboration with the Nepal's national Curriculum Development Center (CDC), a government agency under the Ministry of Education with the mandate to prepare national curriculum. The

students and teachers alike are enthusiastic about the laptops and are asking for more content each time their schools are visited. We have yet to see how this approach can be scaled to the millions of students in Nepal (OLE, 2011; OLE, 2010).

Another challenge faced by micro-learning centers is the financial cost tied to technical infrastructure. Even as hardware costs decline, the costs for technical support, and maintenance will continue to be significant. Scaling ICT devices for all students remains outside the current financial capacity of Nepal, as well as most developing countries. The situation is only compounded by a serious shortfall in both high quality content and teachers who feel confident localizing. While it is tempting to disproportionately channel a lot of technology to create a few centers of educational excellence, this fails in satisfying the goal to offer education to all.

For now, many educators are focused on getting paper-based content into the hands of all learners. It will be years before ICTs are affordable enough to be in the hands of every teacher, let alone ICT, in the hands of every child. Technologies can, however, be used now to provide teachers and students high quality paper-based lesson plans, textbooks and workbooks at low cost. One of the biggest challenges is to align and balance the three key components of change: content, technology and people.

Theme 5.9 Strengthen and expand existing networks. Many stakeholders spoke about the need to build a network of providers focused on localized content development and dissemination. Certain initiatives for attempting this were referenced, including: the Open Knowledge Network (OKN), the Open Technologies Resource Center (OTRC), and the Open Content for Development (OC4D) initiative. There was overwhelming agreement that such networks will be more effective if they are brought under one clearinghouse and if those

networks could be expanded to include members and users from all disciplines, all sectors (public and private) throughout all regions of Nepal.

The OKN project is an open online platform to share knowledge intended to add value to people's lives. It was initiated by One World South Asia, OWSA, an international organization collaborating with UNESCO. OWSA supports the creation and exchange of local content in local languages among local people across the south by utilizing a range of information and communication technologies. OKN is a "human network, which collects, shares, and disseminates local knowledge and is supported by flexible technical solutions" (ENRD, 2010, p. 3).

The Open Knowledge Network (OKN) initiative was designed on basic principles that were derived from intensive and complex research. These key principles were discussed during our focus group discussion held at HLCIT (FGD II, Appendix D). There was unanimous agreement that core principles are essential to build a strong network for accessing and localizing content, including: building on the experience of others; building capacity in communities to support knowledge sharing; working offline for free, but synchronizing with the net; peer-to-peer networking of existing Knowledge Workers; standards for metadata using XML; agreed open content copyright licenses; and sustainable business models adapted to different contexts.

OKN supported 24 ICT-enabled Access Points started by HLCIT, ENRD, READ, and UNESCO. During the course of their project (2005-2007), participating groups were able to collect 567 content items from the AP level (grassroots level). 283 of these content items were digitized at the central level and the remaining content submissions have been kept in their original form at the Access Points where they were submitted. Only 11 of the 24 Access Points

had regular access to Internet, so the other centers sent content in hand-written hard-copy formats. 97 content submissions were received by email and 150 content submissions were received by fax. All the rest were received by postal service (ENRD, 2010).

OWSA has also created an online library of resources, including, among other topics, a catalogue of ICT-based non-formal education modules related to issues in South Asian countries (India, Nepal, Bangladesh, Pakistan, Sri Lanka and the Maldives). OWSA is linked with a global network focused on helping developing countries to bridge the digital divide through an initiative called Digital Opportunity Channel (DOC). The DOC is the 'all about ICT for Development' (ICT4D) channel, hosted by the OneWorld International Association that informs on digital inclusion, showcases best practices in the sector and provides space for sharing and collaboration amongst ICT4D practitioners.

The mission of the Digital Opportunity Channel is to educate and inform a global audience on the use of Information and Communication Technology (ICT) as a tool for promoting digital opportunity for all, leading to sustainable development and a better quality of life. The Digital Opportunity Channel seeks to be the online forum that will best inform governments, businesses and civil society stakeholders about this process of creating digital opportunity (DOC, 2011). However, the DOC is only as effective as the content put into it; and, right now there is limited content from and for Nepalese people. Additionally, it is accessed online and, unless information is retrieved in advance, it is geared for those with good connectivity. There were some additional liabilities of working with OKN. Sanjana, the Program Director for READ Nepal, explained:

> SANJANA: Unfortunately, when OKN funding ended, the OKN also died in Nepal. We have not met since 2009, even though we could try to organize ourselves in this effort. It

was anticipated that OKN could take on a life of its own with ownership from the parties here in Nepal. But, without funding to support OKN, it is very difficult to sustain that momentum on our own.

Another OER effort to connect Nepalese villagers with content is the Open Content for Development (OC4D) initiative. OC4D was initialized by Community Development Network (CDN), a small nonprofit based in the UK (CDN, 2010). CDN partnered with Brigham Young University (BYU) to digitize and open up the content from literacy manuals provided by ProLiteracy Worldwide (PLW), a nonprofit educational organization based in New York. The OC4D portal offers 15 manuals in English as well as all localized versions of the manuals. Most of these manuals have been localized into Nepali and are available in .doc and in .PDF formats. However, the OC4D repository is currently maintained in the USA under the direction of CDN.

Although several Nepalese people expressed interest in this portal of open content for use by knowledge-workers, several people expressed interest for the portal to be maintained by a Nepalese person in Nepal in order to customize the portal for Nepali users. Manohar Bhattarai, Vice-Chair of the HLCIT, echoed this sentiment and expressed his feelings that it is important for the network of Nepalese organizations and government ministries to be coordinated from a central office in Kathmandu where a large supply of information can be shared through offline tools. Manohar further explained:

> MANOHAR: We need an interdisciplinary team. The Open Technologies Resource Center (OTRC) is a start for this. We cannot rely on connectivity here in Nepal; we need to develop a content distribution network that can work offline. This means that we need to bolster our own ability here at home. We cannot depend on outsiders [like those in CDN or other international NGOs] to do this work for us. We must commit time and resources to building our own ability here in Nepal.

Other stakeholders, particularly youth, advocated for strengthening and expanding the human network of knowledge workers across Nepal in order to build open content repositories

for shared use by Nepalese stakeholders. Mira, a youth leader at Gorkha's community center, advocated for more training and integration of social media and Web 2.0 technologies. She shared the following insights:

> MIRA: For me and other trainers, we have an interest to learn more about the social media tools. There is so much interest in this area that I think we [knowledge-workers] could connect to one another through this way and also share much content and many ideas with each other. We can email to each other, but we learned in our last Youth Summit that there are many other good ways that we can exchange information. I would like to know more in this area.

Indeed, there are many pertinent aspects of sustaining and expanding a network for localized content development and dissemination. Overwhelming agreement was that, if the government could allocate funding for this task, then there would be improved collaboration of network members toward sharing content. Issues of sustainability were also addressed, but will be covered in the next section.

Theme 5.10 Foster sustainable content development. A question raised by all stakeholders was regarding sustainability of content creation and perpetual access to content. Because the Nepalese government does not have a large budget and grants have a limited lifespan, most respondents felt that the question of sustainability needs to be addressed upfront instead of down the road.

> MANOHAR: We need to focus on quick wins. What is achievable in the short term? What are the immediate next steps? How do we work toward a sustainable model?

One key issue for sustainability was the idea that a paced, manageable approach is necessary in order to prevent burnout. Tuladhar, a trainer of trainers from Ward 18 Community Learning Center in Kathmandu explained:

> TULADHAR: My recommendation for localization of content is to look at just one lesson at a time. Appropriate subject material is the most important aspect of

localization—that is the main goal for the learner. If subject matter is not localized, the learner loses interest. But, if we are to sustain this growing pool of knowledge, we must begin with a paced approach.

Sanjana echoed the concern of Tuladhar. As the Program Manager for READ Nepal, she was also the point person of her organization who collaborated with the Open Knowledge Network (OKN), funded by One World South Asia.

SANJANA: Some of the key lessons we learned through the OKN is to start small, not big. First, we must identify what is manageable. We would do a better service for the community if we would work with less content but localize it better.

Manohar proposed that there might be a possibility of HLCIT funding specific gatherings for knowledge-workers whereby content could be created and submitted.

MANOHAR: HLCIT has considered the concept of hosting Content Development Camps. There are 216 telecenters on record right now. We need to organize camps for localization—not 2-3 people only. Localization needs more practical action. We need practical answers to practical questions, and that will involve great participation from the local community. Perhaps we could host Content Development Camps in different regions and invite knowledge-workers to join together for this effort?

While many participants agreed with the concept that Manohar proposed, Tuladhar had some additional questions to consider related to improving practicality when implementing this effort.

TULADHAR: If you gather these different content designers together, then how will you decide who are the target groups? It must be decided in which context these manuals should be developed. What's the end goal?

Several people commented on the importance of creating incentives for those who create, submit, and share content.

TULADHAR: I have analyzed various community learning centers (CLCs) of Nepal. My suggestion is that teachers or facilitators should be motivated with financial incentive. Have you thought about these expenses? This is the way that you can ensure quality outputs. Facilitators, though they are comparatively low-paid and mostly volunteers,

could be the best actors in literacy activities if their contributions are duly recognized by the community.

Subir, Program Officer form Open Learning Exchange (OLE) of Nepal had a different

viewpoint:

SUBIR: Yes, I agree that we will need a mechanism for incentivizing stakeholders. But, I do not agree that we should focus on incentives that are financial. This is not sustainable. This requires a large supply of funding that we know will someday run out.

Shrutee, one of the Nepalese researchers, concurred with Tuladhar based on her

experience talking with stakeholders during her site visits and as a youth who grew up in Nepal.

SHRUTEE: Trainees expect themselves to get paid because all those thousands of NGOs and INGOs who are managed by foreign donors started that trend to attract more people and now it has become a custom. It has created a negative culture with regard to sustainable development.

Krishna Pandey, representative of the Open Technologies Resource Center (OTRC),

offered a possibility for incentivizing stakeholders in a sustainable manner:

KRISHNA: I also believe there must be incentives for people to contribute quality content. I have talked about the incentive system with local groups in order to encourage people to help localize existing resources in order to create new content. There are several sites today that receive all their content from people who have nothing to do with site owner. The only thing that encourages them to contribute the content (besides an interest to share knowledge) is the online reputation they receive through a reward [system] whereby their contribution is given some form of point or score. This way, [stakeholders] are willing to return back often to contribute and, thus, to improve their reputation. And, everyone likes his or her own content submission to be read. Hence, the contributors indirectly act as ambassadors pushing others to read and contribute to content. In my opinion, with mere financial incentive, one will contribute as long as there are resources. But, he or she will never care about the cause after the resources are exhausted (i.e. after the project duration). This is what generally happens to several INGO-funded projects in Nepal). The incentives are obviously financial, but contributors are made to believe that they are getting something else, too, in form of their reputation. And, in small villages, one's online reputation can often be very close to their social reputation.

Another key issue identified for improving sustainable content creation is the importance of bottom-up feedback mechanisms. Some people identified that, if content submissions are not quality, then the users would lose interest to use the shared pool of content. However, if the content submissions are of a high quality, then users would use them perpetually and the interest for two-way content sharing would grow. This concept was mentioned by one participant and referred to as the *Wikipedia model*.

Wikipedia is the largest open content project in the world. It is based on the risky proposition that more participation will improve the final product (Wikipedia, 2011). This concept is hinged on the *virtuous cycle* with the realization that it could also tend toward the *vicious cycle*. As Figure 5 (below) indicates, the key to making the cycle virtuous is through bottom-up feedback.
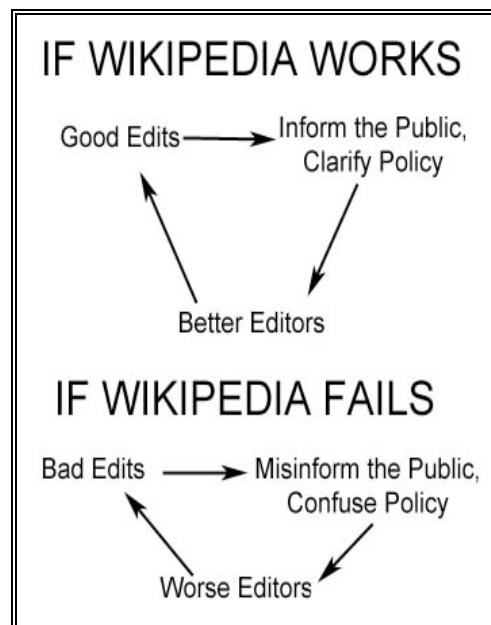
Figure 5. Wikipedia feedback loop.

A virtuous circle or a vicious circle is a complex series of events that reinforces itself through a feedback loop. A virtuous circle has favorable results, and a vicious circle has detrimental results. A virtuous circle can transform into a vicious circle if eventual negative feedback is ignored. Both circles are complexes of events with no tendency towards equilibrium (at least in the short run). Both systems of events have feedback loops in which each iteration of the cycle reinforces the first (positive feedback). These cycles will continue in the direction of their momentum until an external factor intervenes and breaks the cycle (Wikipedia, 2011).

Indeed, feedback is an important aspect of sustainable content development. Grassroots participation is at the core of the open content possibilities and challenges. However, if the Wikipedia model is a good indication of what is to come through open content localization and customization, it bodes well for developing countries. More players means more localization and this could possibly lead to better content localization for particular needs of rural communities in various formats according to the disparate needs and abilities of users in Himalayan villages and across the globe.

Results Summary

This chapter illuminated the key themes related to how and to what degree knowledge-workers localize content for Himalayan community centers in Nepal. It started out by sharing key themes related to the ways that knowledge-workers conduct localization activities and the principal outlets whereby localized content is shared. It then identified some of the different definitions of localization and the ways that content is customized in order to make it useful for the learners who use it. It then explained what localization looks like in the seven different sites according to their own definitions of localizing. It grouped these sites across a continuum in

terms of high, medium and low degrees of localization activities and did so according to respondent's perceptions of their own definitions and practices of localization. Finally, it summarized the strategies that stakeholders utilize in order to overcome the challenges to localize content for the needs of those they serve.

Other key distinctions that emerged through analysis of the data were the varying implications and understandings of what it meant to use information and communication technologies in education. This concept of *using* ICT took on various meanings ranging from adaptation and consumption to mastery and empowerment. This distinction is roughly analogous to Hawkins' (1988) distinction between transfer and transformation in a rural education case study. Those who understood the use of ICT in terms of consumption were more likely to conduct training classes on content localization, which essentially transfers knowledge from urban centers and abroad (i.e., *the core*) to rural communities (*the periphery*). On the other hand, transformative approaches sought to redefine ICT in local terms: these programs included creating new technologies suited to the local context and developing a critical awareness of how technology influences culture and consciousness. This difference of transfer and transformation is a dynamic that continues to exist within the nonformal education community of Nepal and will continue to influence the definitions and practical implications of content localization.

CHAPTER 5: CONCLUSION

Open Educational Resources (OER) are increasingly integrated into educational arenas to expand access to knowledge for hard-to-reach learners. Although OER increasingly improve access to content, many experts concur that without localization, the relevance of content is limited for learners in multifarious contexts. This study built from the theory that "localization unlocks the power of OER" for disparate learner needs and ability levels. The data from this study provide an evidentiary-basis for numerous OER claims regarding content localization. This dissertation emphasizes the realities of OER localization in Himalayan community centers of Nepal and illuminates strategies, challenges, and experiences of knowledge-workers who customize content for rural learners.

Chapter Overview

This chapter provides a conclusion to the entire dissertation. I start by discussing overriding principles regarding localization of Open Educational Resources. Next, I connect these principles back to the existing literature and discuss implications and relevance of these findings. I then conclude by providing a summary of this dissertation and the contribution it makes to the nonformal education in Nepal and to the global understanding of OER in developing country contexts.

Meta-Theme 6: Principles of localization. During the course of making meaning of all the data collected with this study, I reviewed all of the 12 themes presented in the Findings Section of this dissertation. In summary, I have found four overriding principles that have consistently emerged with regard to knowledge-workers' lived experiences improving and expanding the localization of content for Himalayan villagers in Nepal. This chapter will

explore those key principles, provide a summary of the dissertation, and connect these findings

back to the scholarly literature in this field. It will then explain the implications and relevance of

these findings to development of a theory regarding teaching and learning using OER. Finally,

the chapter concludes by looking to the future of OER localization in Nepal.

    Theme 6.1 Principle 1: Localization must involve locals. One of salient points

expressed by all stakeholders is the importance of local involvement in the customization of

content for local needs. Put simply, "only a local can localize" (OpenContent, 2011). This

dissertation provides concrete evidence of the importance of local participation in localization

processes. Many respondents cited positive examples of when content worked well because of

local participation in creating and/or adapting it. Several stakeholders also cited negative

examples of when content did not work because it was adapted without participatory processes

for including local input. Some of these key points are summarized below.

 From a federal government standpoint, Manohar shared his insights:

MANOHAR: As a federal government, we face several questions related to localization:
"At what level should localization take place?" "Whose responsibility is localization?
What we have learned through our experience thus far is this: Local people are best
suited to localize. They are the people who know what the resources and needs are.
Local people will also have buy-in if they are the means whereby localization takes place.
Localization means involving locals.

As employees of the Open Technologies Resource Center (OTRC), both Krishna and

Jitendra shared their experiences working with local communities for content localization:

KRISHNA: I have learned that localization is only effective when done with
involvement of people in the society where the content or software is to be deployed.
Moreover, I feel that things like localization must not be done by one or two persons, but
must involve a larger mass probably in form of a camp of 15-20 people. This way, you
have several people who can experience the ownership (the content credit must ensure
that the people involved in localization get their due credit) and care for its survival. This

will probably ensure the most important aspect a donor/implementer cares about: sustainability.

JITENDRA: I have been working on localization of 'Ubuntu' Linux distro in the Nepali language at OTRC. The little experience that I have makes me believe that: localizations are most (in most cases 'only') effective when they are done with involvement of people in the society where the software/content is to be deployed. Localization done with involvement of people in sites far from deployment site might not be very effective as the dialect varies widely in Nepal. It seems this would be a similar [issue] in other countries as well? There are enough papers available to suggest the correlation between geographical proximity and content/software acceptability. This is my experience and I have learned it time and time again.

As a practitioner of nonformal education with over 20 years of experience in the field of

literacy programming, Tuladhar comments on content localization in his community center:

TULADHAR: What makes [our] literacy programs different in Ward 18 [of Kathmandu] is that we utilize local materials, local wisdom, local experts, and local museums. We focus on using what the locals know and what is familiar to them. A key ingredient of localization is to specify the needs of groups. Another aspect why localization should be done in the community is because you need a relationship of trust. In the village setting, all of the community members know each other. Our facilitators engage as if they are family members. They build a relationship of trust with the students. This leads to a better ability of facilitators to tailor content for the needs of learners. Localization really is the key to retention and comprehension in literacy classes.

Indeed, quality content customization is hinged upon a participatory approach that involves

locals in the process of choosing content topics, providing input regarding materials and formats,

and tailoring the mechanisms for continuous bottom-up feedback.

Theme 6.2 Principle 2: Localization is bolstered by a community of practice. Another

principle of localizing content is tied to strengthening the network of stakeholders who are

committed to getting quality content into the hands of villagers. Respondents in this study

repeatedly emphasized the importance of a team effort to access, customize, and disseminate

content. Lave & Wenger (1991) identify a community of practice (CoP) as a group of people

united by a shared interest, craft, or profession. The group can evolve naturally because of the

groups' mutual interest in a particular area, or it can be created specifically with the goal of gaining knowledge related to their field. Members learn from each other by sharing information and experiences and by developing themselves personally and professionally through group conversations either online or offline (Lave & Wenger, 1991).

During the course of this study, most respondents expressed an interest to remain connected to or become connected with other stakeholders involved in the similar kinds of activities related to content localization in which each person is involved. These CoPs are strategic to sustain momentum in the practice of localizing OER as well as offering insights on how to localize better. These CoPs exist online through discussion boards, wikis, blogs, newsgroups and other social media. They also exist in real life through small-group conversations at a learning lab or at a conference, in a field setting, through a network fostered by an NGO, or through a Youth Summit. During the course of this study, many respondents spoke about the importance of CoPs because they provide the opportunity whereby practitioners deliberately gather to share ideas, best practices and strategies with one another.

Sunila, a youth leader and trainer from Sankhu's Youth-Managed Resource Center explains the importance of a community of practice in her life:

> SUNILA: I would never have been part of this movement if it weren't for Ramita and the other youth managers in our group. We are all committed to service and so eager to help others. But, I am strong because of the support of those around me. Ramita helped me to see how computers could be useful for my life. Before I came to this center, I had no knowledge of how to use computers. My family did not see a need for me to come here. But, now I am the one helping other youths. Even though I am now married, I continue to come [to the center]. I hope I can provide help to other youths and keep this motivation [for learning and knowledge] strong.

Indeed, new CoPs are emerging in the wake of new educational and technological revolutions in Nepal and are an important component of sustaining the perpetuation of localized

open content. The Youth Summit, a weekend event held for 30 knowledge-workers across Nepal, was focused on sharing best practices and challenges regarding content creation and dissemination. This Summit has led to these youth and those around them to engage in creating their own websites, showcasing their programming, blogging about their purpose and passions, swapping content via email, and building wikis with images, text, and audio files that are all used in various community centers to amplify learning for rural villagers. In both deliberate and non-deliberate ways, these youth have created a community of practice (CoP) that is simultaneously global, digital, local and tangible (Lee, 2009).

As new and old CoPs evolve, shared ideals become the backbone for social betterment activities. This appears to be one of the most far-reaching and cost-effective ways to share local content across the nation of Nepal. Nepali youth involved in YMRCs coordinate between their local communities and interested outside individuals—anyone from international donors to government officials running social programs to the random Internet clicker (as evidenced by several international students who have become interns with rural community centers) (Lynk, 2009).

As the diversity and number of players of a CoP increases, local leaders are bolstered with strategies to respond to local needs while also building inter-community, national and global connections (Lambson, 2009). Through these connections, social capital for knowledge-workers increases, and through local outreach, each Nepali village with a micro-learning center is able to connect more easily to resources that expand knowledge and to engage in localization activities that allow these tools to be used more effectively.

Theme 6.3 Principle 3. Localization must be done in appropriate formats. While there has been great effort and focus on deploying educational hardware in the developing world, much less hype and attention has focused on the content students will use once these systems are within the reach of hungry minds. Communities are not only facing questions regarding content localization; they are also pushed to consider the best and most appropriate formats for sharing content with villagers who have varied ability levels and live in different villages laden with unique combinations of obstacles for accessing that content. Indeed, many of the questions regarding content localization are hinged on the decisions regarding what formats the content may be shared to best accommodate learner's ability levels (e.g., audio file, text file, video file, wall newspaper, print-out, group discussion).

Some of these other questions that are currently considered with regard to selecting formats for localized content include: How can educational systems, and the stakeholders that support them, adapt existing and new content onto new mobile devices? Will this adaptation be able to challenge the existing income streams and vested interests of current content production and dissemination models? Should this content focus on ebooks and other electronic media that replicates existing content, or does this provide an opportunity to change the ways in which content is created, teachers educate, and students learn? (Rowe, 2009)

Some additional insights from respondents regarding appropriate formats for disseminating content are given below.

> SANJANA: What we learned through OKN is that it's important to document indigenous knowledge through audio files, digital photos, and stories. Many times, the best way to share local content is through discussion, mass meetings, word-of-mouth, and by posting on a wall-newspaper by creating content in understandable formats (can be audio, visual or illustrative print) at the various access points. Content that is pushed to the central hub

(housed in Kathmandu) got shared to other areas with similar concerns. Usually the original format of the content is what worked in the other communities as well.

Jitendra and Krishna agreed with Sanjana that it is important to respect the ability levels of learners and not expect that literacy levels will be very high in remote places. For this reason, content should be made available in non-text formats.

> JITENDRA: I remember when we first started working with an NGO doing video tutorials with content about fish farming in villages of far western Nepal (near the China border). It was essential in this case that content delivery should not be in text, but instead in video and audio files for lower-literate groups. This was done in these communities using solar power and an LCD projector and white wall.

> KRISHNA: I have been working with remote villages in far eastern and far western Nepal. As per the conversation with villagers out in those areas, I have learned that they love to learn from video tutorials rather than text-based materials. That is the best format for sharing content to them since many of them have not yet had a chance to join the literacy program yet. But, this kind of content motivates them for more learning because they see the value of knowledge.

Besides identifying new and appropriate formats for disseminating content, several respondents indicated a need for changing the existing kinds of formats used for creating content. Subir, from Open Learning Exchange (OLE) Nepal explained:

> SUBIR: Many more knowledge-workers would be able to modify and share content if the software was geared to their levels. This means that the formats must be more simple than they are right now. If we expect facilitators and tele-center staff to engage in content sharing activities and content editing, then we should involve them in training about software. Also, the wiki must ensure WYSIWYG editor at the minimum. Any further simplification would be more appreciated, I am sure.

Because software continually evolves, it is essential to also continually seek to identify the most appropriate formats that can and should be utilized for disseminating content in rural villages. This means that low-tech and context-rich formats should be identified and/or developed and shared between communities according to their capacity levels. These

continually evolving tools will become the platform for continually evolving content to be localized and delivered in formats that are congruent with the needs of local users.

Theme 6.4 Principle 4. Effective localization is proportional to understanding local contexts. A theme that continued to emerge through the course of interviews and focus group discussions was this: the more a knowledge-worker understands a learner's context, the better that content can be localized to the learner's needs. That said, various respondents attached different weight to specific indicators related to context. Some of these differences are referenced in the definition of localization in the first part of Chapter 4 (e.g., culture, religion, geography, gender, profession etc.) Some of the salient responses that evidence this theme are given below:

> TULADHAR: We need to connect literacy to content that is related to real life situations like business and health. People need advanced classes. In Kathmandu, people prefer both English and Nepali classes. Without a mechanism for financial support, literacy classes cannot be sustained. We have explored beauty parlor training, a sewing center, also training in local music (like pipe and drum) for 9 months. Income generation is the first motivating factor for literacy. We need more materials on this topic and in the formats that allow neo-literates to engage.

> KRISHNA: Again by the definition of 'content,' we just can't be limited to computer training content, or any ICT-based content. If we are really doing this work for [the local people], then we need to address the various areas of their interests.   And especially their necessities of daily life, like: agriculture, health, irrigation, microenterprise and other content related to their areas.

 A major component of contextualizing content is fostering an understanding of rural realities. One respondent, Tara, is from the rural village of Pelakot. After traveling and studying overseas for four years, he helped initialize an educational initiative in a community center of his home community. He had laid out a plan with other Nepalese students who lived abroad and

spoke about the disconnect of their plans designed in the USA with the rural realities of his home

village once he arrived after a four year gap.

> TARA: In Pokhara, I met Shrutee-lai and Sanjeep-dai who are studying overseas just
> like I am. All of us had spent a few weeks home in Nepal before we met after having
> been together at BYU in the USA. So we had tons of things to talk about, how
> everything we had planned could not and would not work in Nepal. All those hours and
> hours of meetings among Nepalese students to figure out the best words, the best
> approaches to address the Nepalese communities did not seem like it would work because
> of the huge changes that had undergone in Nepal while we were in USA. Later, we were
> so involved with determining the culture in that area [where we had planned to do
> training], the language variation between people in Kathmandu compared to Pelakot
> Galyang, and the differences in the kinds of incentives for people in different villages and
> everything, we felt very overwhelmed with all of the aspects of understanding rural
> realities. But, even though this was time-consuming, we realized it was worth it if we
> would be able to customize the project according to the local needs and context.

> SANJEEP: We held tons of conversations with different people, trying to determine the
> best possible way to understand their problems, developing the questionnaires to help us
> understand their interests, and determining various groups and parties that can help us
> with the solutions in this [rural] community. This was very challenging, but it was the
> best learning opportunity. As three different team members, we had three opinions, three
> approaches, and three solutions for addressing the different conflicts and challenging
> situations of working on an educational project with the leaders of the rural community
> center. And, during all the confusion of trying to reach one common solution, we learned
> that community development is difficult because it doesn't have one fixed solution as in
> maths. That day we realized how important it is to invest a lot of time researching things
> on the ground before coming up with the decision.

 Even practitioners and stakeholders who have been working in the field of development

for years acknowledged that they are often surprised by the way projects will *succeed* or *fail* in

rural communities. What works well in one village may not work at all in another village.

Because of this, scalability of micro-learning projects in developing countries is an oft-debated

subject. At the core of successful replication of development models is identifying integral

ingredients that can remain consistent while allowing flexible scaffolding that can be modified to

the local environments where these projects are implemented (Christensen, Lehr, & Fairbourne,

2010). The problem is, most programs do not build in that flexible scaffolding; rather, a standardized (e.g., regional or national) approach is often used instead.

Shrutee, one of the Nepalese members of the research team, summarized FGD I (Appendix D) this way:

> SHRUTEE: Today we held a focus group discussion in Kathmandu at the NGO office of Tulasi Meher UNESCO Club. There were politicians, IT professionals, social workers, volunteers and academicians. Together, they were talking about the former projects that have worked and some new projects that organizations were thinking of launching. Then, the conversation turned to the concept of starting an open content portal for sharing educational resources among Nepalese people. They agreed upon the fact that Nepal is way too diverse and it could not be predicted at a central level what was needed in a village level. For example, there are software engineers who can develop software for the whole country and yet there are villages where people still do not know the existence of another village, so how could they know that this software even exists? No matter what all the people talked about in all the meetings that we conducted, the concept of launching an open content portal was always supported as a worthwhile project because someday the need for educational materials is so great in rural communities. The only thing is finding a way that ground-level people can gain the skills to access and localize those educational materials. Also, everyone agrees that the computer is going to be a basic need for people rather than just a machine. So, if everyone is going to use ICTs, then they have every right to know where to get good content using ICT tools.

Few themes emerged as often when reviewing the data collected through interviews, focus group discussions, observations and artifact reviews as the theme regarding the importance of context to localization. Indeed, the evidence reveals that the relevance of content to local needs is directly proportional to the degree of understanding the knowledge-worker has of the local community.

Implications of findings. Although OER localization is a new concept, the actions that are implied by or exercised through localization are not new. What is new in this dissertation is the evidence-based proof that localization can and does happen in strategic ways that can support learning. Furthermore, this dissertation reveals the power of localization to support learning in

developing countries through OER tools – a premise that has been taken for granted in absence of data that actually puts grounding under this hope. The findings from this study are relevant to decision-makers (policy-makers, donors, program directors, and practitioners) in the education arena who are still unsure of the best way to handle OER in the classroom, micro-learning center, and community. This dissertation is unique because it amplifies the voices from the ground where OER are utilized in order to examine how localization takes place, why, and to what extent it is relevant to achieve learning gains of would-be beneficiaries.

The four principles of localization given above are derived from concrete evidence gathered from stakeholders of non-formal education in Nepal during the course of this study. These principles of content localization help to lay the foundation for solidifying a theory related to the ways that localization may unlock the power of OER. This dissertation is unique because it provides an evidentiary basis for improving utility of OER for learners in Nepal and in other developing countries.

At the core of this theory for OER are the concept that localization is closely tied to situating knowledge within an appropriate context. Another central concept is the truism that locals know local context best. Hence, if context matters and locals know local context best, then the crudest take-away from this dissertation is this: localization means involving the local person in localization activities.

Building upon these central tenets of a theory regarding OER localization, this study is both convergent and divergent with existing literature related to localization. Connections between the findings from this study to the broader literature related to instructional design and educational psychology are explored below.

At present, there are few studies available regarding actual strategies and case studies of OER localization in developing countries (Wiley, 2011; Connexions, 2011; OERF, 2011). In the course of the literature review, I found many resources that identified this gap, advocated for more research, and hypothesized the importance of localization with regard to the potential utility of OER. The clarion call is for more studies on OER localization to illuminate what works, and in what context, and why or why not.

Research is something rooted in theory that ideally will lead to improved practice. Without a theoretical basis, research is unlikely to go beyond data gathering. In a general sense, the theoretical insights that lead to good research of OER are likely tied to general educational and social theories more than theories explicitly dealing with open and distance learning. Upon examination, existing research related to OER appears to be mostly atheoretical and predominantly descriptive literature. Perraton (2000) contends that research related to open and distance learning has often neglected considerations of its purposes, outcomes, and relevance to major educational problems, in contrast to the amount of research on its application.

Some learning theories have been used as the starting point for a few studies on research and practice in open and distance learning (Perraton, 2000); these can be helpful in understanding particular elements that enhance or detract from learner experiences of those who learn through OER in micro-learning centers of Nepal. Holmberg (1995) examines this issue in the context of open and distance learning and, drawing on the work of Bruner, Gagné, Ausubel and Bààth in particular, concluded: "distance education and thinking about distance education are firmly based in general educational theory" (Holmberg, 1995, p, 160). Thus, it is insightful

to connect this research to relevant and existing learning theories and epistemologies as a starting ground.

Relevance of findings. Within an OER context, content appears to hold the greatest relevance for learners when developed using a constructivist approach (IDRC, 2011). A framework of constructivism is hypothesized at encouraging learners and instructors to jointly contribute to the ongoing development of a course or program. An OER development program can also follow the emerging instructional design approaches of functional contextualism (Fox, 2005; Jonassen, 2006; Reigeluth & Yun-Jo, 2006). This approach is particularly focused on contextualizing materials, which is important when utilizing OER within a new context (Fox, 2005).

Constructivism has increased our consciousness to important philosophical concerns about tailoring instruction to the learner's lived experience; however, a clearer philosophical outlook related to OER may be through functional contextualism. This philosophical perspective on contextualism holds relevance for instructional designers in micro-learning centers because it builds from Pepper's work *World Hypotheses: A Study in Evidence* (1942) in that it encourages understanding the ways in which different cultures, or communities, construct truth and knowledge. Contextualism is a worldview that situates any event "as an ongoing act inseparable from its current and historical context and in which a radically functional approach to truth and meaning is adopted" (Fox, 2005, p. 7). The root metaphor of contextualism is sometimes referred to as the *act-in-context,* which refers to the everyday way that people experience and understand any life event. This, too, is highly relevant for the ways that knowledge-workers liaise with learners in a non-formal education setting of Himalayan community centers in Nepal.

This framework of constructivist contextualism harmonizes with data gathered in this study regarding localization of content for ubiquitous contexts of remote communities with limited exposure to the outside world. Knowledge-workers repeatedly stressed that the utility of content was directly proportional to the degree that it was relevant in the particular context of learners. This means that localization of OER involves an appreciation of people's behavior in their current context; in other words, seeing the individual and setting as an integrated whole where the different features of an action are blurred between themselves and their context (Fox, 2005).

In contextualism, context refers to both the current and the historical context of an act. This dovetails with Dewey's definition of context as "the historical situatedness of the meaning and function of behavior" (Morris, 1997, p. 533). This is also in line with what Freeman (2005) noted as the importance of taking into account *context issues*; and, with regard to this study, such matters considered by knowledge-workers include: learner ability levels, infrastructure capacities, and content formats that are appropriate.

Building from the framework of constructivist contextualism, learner participation is at the crux of creating highly-tailored, individualized learning experiences. One of the most prolific commentators on the OER movement, David Wiley (2005), identified that effective content localization is tied to a "learner as contributor" paradigm shift (Wiley, 2005; Wiley, 2007; Wiley, 2010). What makes content meaningful and useful is the way that it is available and accessible for adaptation—and, ideally, those who are modifying (and hopefully improving) the content are also willing to contribute that content *back* to a growing pool of localized knowledge.

At the core of this concept is the root word *trib*, a shortened form of the word *contribute*. Wiley refers to this process as *trib*ing and to those who do it as *trib*ers, (Wiley, 2005). But, in order

to expand the participation of more users, there is a need for content systems to be simplified in order to allow contribution from low-tech practitioners and consumers who have rich insights regarding content (Wiley, 2007). This resonates with key points of this study that indicate participation in content localization processes is intricately tied to fostering *buy-in* from knowledge-workers and NFE stakeholders and vice-versa and that interfaces need to be more user-friendly and in Nepali-formats (Pradhanang, 2010).

Functional Contextualism is also increasingly discussed (Fox, 2005; Jonassen, 2006; Reigeluth & Yun Jo, 2006) as a relevant approach for teaching and learning with OER since it is particularly focused on contextualizing materials for learner needs and interests. And, it appears more often than not that users and producers of OER are the same people (Wiley, 2007). OER pioneers argue that improving OER collection, dissemination, and localization could be strengthened by a growing corpus of case-studies from around the world (OER Toolkit, 2009), and this dissertation research study is relevant to bolstering research and theory development in this arena (WikiEducator, 2011; Mackintosh, 2011; OER Handbook, 2011; OERF, 2011).

Many of the processes of localization as described in this study occur within a constructivist and functional contextualism approach. The constructivism framework is tied to encouraging knowledge-workers and stakeholders to contribute to the ongoing development of content. The contribution aspect of a socio-constructivist approach dovetails with Wiley's (2005) comments regarding OER and the relevance of Web 2.0 technologies that enable expanded opportunities for bottom-up contribution. Such tools provide integral feedback mechanisms that are increasingly used by instructional designers, program developers, and human performance technologists.

Sunil Singh (2011) has written one of the most recent articles on OER localization, *A perspective of OER in Developing Countries*, and contends that in order for more widespread involvement of practitioners in localization they must view localization in the OER movement as an extension of activities that educators everywhere have always done, only these activities occur in a new arena. "No matter where you live or what you teach, when you modify open and freely shared materials for your own use, you are *localizing* the materials" (Singh, 2011, p. 3).

However, he argues, localization has particular meaning in the OER movement because it embodies a learner-focused approach that is dominant in the philosophy of openness. Singh continues: "localization is at the heart of the OER process—it exemplifies diversity, openness, and reusability" (Singh, 2011, p. 1). Still, he argues, this is a premise that has yet to be supported with a breadth of studies and concrete findings as to how localization is accomplished. Many perceive that OER are more of an ICT tool than it is an educational tool. But, OER are really a hybrid of both and need to supported by both disciplines.

Localization in a broad sense has usually been talked about in terms of adaptation (Reigeluth & Yun-Jo, 2006). But, this does not mean that adaptation has always been *for* the local people's interests*,* let alone *by* the effort of the locals themselves. A recent study (2009) conducted by the Manchester Centre for Development Informatics revealed that *laboratory innovation* that is done outside of poor communities but on behalf of the poor has experienced the dangers of *design-reality gaps* (Heeks, 2009, p. 13). Heeks reveals that new change agents (a.k.a. knowledge-workers) are emerging in contrast to the traditional ICT system designers who hold only temporary relationships with would-be users in poor communities:

> The growth of ICT4D [Information Communication Technology for Development] and the growth of the poor as a market for ICT systems has led to emergence of some more

permanent organizational forms: what we can call ICT4D's "new innovation intermediaries"…that are likely to play a growing role during ICT4D 2.0 (Heeks, 2009, p. 14)

This echoes a common theme in this study and in the broader educational development discourse that there is demand for a pedagogical and epistemological shift away from previous educational propensities that favored hegemonic Western influences to prescribe what local indigenous peoples should know and the best ways that they should be taught (Chambers, 1983; Curtis, 1990; Laubach, 1942; Wiley, 2007;).

Academic definitions of localization hint at the importance of adapting educational resources from one context for improved relevance in another context. In general, these different contexts are grouped as geographical, pedagogical, political, or technical and it is evident that more than mere translation or image swapping is needed (Wiley, 2007). These concepts also ring true to the respondents in this study who said such things as: "translation alone is not enough" (Ramita Shrestha, 2010), or "Hindu messages do not resonate with our Tibetan villagers" (Chhapsang Lama, 2010), and "our four regional contexts of Nepal require their own respective content developers" (Manohar Bhattarai, 2010). Referencing the importance of localized OER in his own context in India, Singh (2011) shows that there is no shortage of learner interest in educational material that is effectively tailored to the "local requirements" in developing world settings.

One difficult statement posited by Singh is that "the content difference and local emphasis [of content] are usually reconciled over time" (Singh, 2011, p. 2). Depending on the angle one takes for interpreting this statement, it may be viewed as both convergent and divergent from data in this study. On one hand, it reveals the innovation of knowledge-workers like Ramita, Urbashi, and NaniHira who transcended national, regional, and global curricula boundaries in order to adapt

information for the local needs in their respective communities. This parallels the notion that learners may benefit from a shared sense of problems with others beyond their own community and this concept dovetails with insights from Rohit Pradhan who said, "we are strengthened by diversity… and content tools may be enriched by many viewpoints of the same problem" (Pradhan, 2010). This is also in concert with the view that "OER efforts can draw the biggest strength from the universal character of education, providing a commonality of purpose that can be used to promote OERM [the OER Movement] with a global character" (Singh, 2011, p. 2).

On the other hand, this statement may be interpreted to mean that, even if content is void of local emphasis, this contextual weakness will be remedied in the long run (Singh, 2011, p. 2). If interpreted this way, Singh's view is in direct opposition to the findings of this study which show that learners are prone to reject content that is not properly and appropriately packaged according to cultural or sociological contexts (Kunwar, 2010; Sanjana, 2010; Shrestha, 2010; Tuladhar, 2010). Singh's argument may posit that things will work themselves out positively, whether or not there is an impetus for change. A question at this point is, who will remedy the content, or how will the situation be remedied? Sometimes referred to as "trickle-down development," (Chambers, 1983), this infers a blanket or generic approach to content development and dissemination with the hope that what reaches the ground is what is usable and useful to learners. This notion is also in stark contrast to other evidence given by Street (2010), Nabi (2008) and Chambers (2000) that "trickle-down" development strategies have rarely worked; in fact, the overwhelming evidence is that they have *not* worked.

The domestication theory of ICT is also relevant with regard to OER localization in that it is related to embedding content within a cultural packaging. This metaphor, propounded by

Silverstone, Hirsch and Morley (1992), could be extended from a household level to the community, national and international levels for OER to be truly an open resource in which every type of stakeholder could participate in making content relevant to their own needs. It is obvious that learning materials need to be translated into local languages. What is not so obvious is that successful translation depends on the recognition of cultural context and the translator's knowledge of the subject area relative to the community in which the information or skill will be applied. Words such as house and freedom may have different connotations depending on the learner's experience (UNESCO, 2011). This is elaborated on by the Commonwealth of Learning (2011), where the term localization reflects "the meaning, position and physical space given to OERs vis-à-vis the individual's social, political and cultural values" (COL, 2011).

Advocacy for participatory approaches now dominates the development discourse and has recently started to make inroads within the discussion related to OER. Technology is definitely one of the barriers to more widespread engagement; many educational institutions still have traditional governance structures and teacher-centered pedagogic models that inhibit participation. This study reveals that successful OER initiatives are those that employ a learner-centered and decentralized approach. There is, then, a basic contradiction between the openness of participation necessary for effective localization and the existing centralized institutional models that are dominant in developing countries, including Nepal. Such contradictions can only be addressed through an effective governance framework that would also help to strengthen the participation of all types of stakeholders. This sentiment was expressed often during the course of this study. The Commonwealth of Learning (2011) expounds on this concept:

> The phenomenon of OER/OLR is an empowerment process, facilitated by technology in which various types of stakeholders are able to interact, collaborate, create and use materials and processes, which are freely available, for enhancing access, reducing costs and improving the quality of education at all levels. (COL, 2011)

Summary

The present OER literature and the results of this study both concur with the imperative that the *open* in OER must be perceived not merely from a technological perspective but also from a governance standpoint.   This dissertation provides valuable evidence about *why* localization matters (a statement that has been hypothesized for the past decade). This dissertation is unique in that it also provides evidence of *how* localization can and should be executed in order for OER to reap efficacious learning gains for rural people. The *open* should also reflect the institutionalization processes that facilitate *all* types of stakeholders to participate on equal terms. Kanwar, Kodhandaraman, and Umar (2010, p. 1) elaborate on the philosophical implications OER hold for educational systems across the globe, particularly in developing countries:

> OER can radically change the landscape of teaching-learning in the twenty first century. OER can contribute to the creation of genuinely inclusive knowledge societies. However, this is a process which takes time. Together, we can do it.

Besides the changes indicated as necessary from a governance and institutional standpoint, the literature from the field of instructional design reveals that there is still a gap in the mentalities and mechanisms needed for widespread local participation in the localization processes which make education meaningful. Parallel to the overarching gap in decentralized educational policy and decentralized educational practice, the OER field has yet to achieve decentralized localization of content. In order for more stakeholders to reap the benefits of OER in rural educational development settings, OER proponents contend that the old phrase "content is king" will be replaced with the slogan "community is king" (Degeyter, 2007). These arguments infer that localization of

OER are tied to social movements that will result in institutional change of how curricula are created and how educational programming is executed. Kanwar, Kodhandaraman, & Umar (2010, p.1) argue that:

> The present debates in OER are too focused on technology and there is rarely any discussion on issues such as stakeholder engagement and the politics of power. OER require a process-oriented approach in which stakeholders and citizens come together and articulate their views and influence institutional change.

As decentralized localization practices increasingly challenge the norms of centralized control, community and government roles are being redefined. These are not the only institutions impacted by OER and ICT; these technologies are also redefining family roles and individual identities. Hirsch and Silverstone (1992) refer to personal economies of meaning in their book, *Consuming Technologies: Media and Information in Domestic Spaces*. They posit that each individual is a culture of one and that technology creates great sociological ripples: "what kinds of persons are people making of themselves out of these things?"

Lie and Sorensen (1996) echo this sentiment that technology impacts the definition of one's identity and alters one's sense of community. As OER are increasingly localized to specific abilities and interests of learners through mobile telephony and low-tech ICT, it is likely that technology will be incorporated into the domestic sphere. This phenomenon is laden with nuances of impact that are at once seen and unseen. As ICT has proliferated in other communities around the world, the "social and technical are enmeshed in our own and collective domestications" (Lie & Sorensen, 1996, p. 223).

Thus, highly localized OER not only open up educational opportunities; they open up experiences, options and choices of what we can do in every sphere of life. They also create new options of what we *think* we can do, and therefore, our perception of the world and our own role

in it. Hence, one slogan of the open educational movement: "Learning is expanding" (Wiley, 2006). This hints at multiple meanings with regard to OER in rural communities: opportunities for accessing knowledge are *expanding*; learning is *expanding* opportunities for people to do more things; and new educational opportunities are *expanding* one's reach in and across the world.

As OER are integrated into family life in Nepalese villages, the devices and the knowledge accessible through them also substantively impact social relationships. "One … is left to local stratagems to negotiate powers and abilities" (Hirsch & Silverstone, 1992, p. 2). For this reason and others, Nepalese villages, like other communities across the world, seem conflicted with regard to their yearning for more information and their simultaneous disdain of foreign technologies that pose a threat to their traditional ways of life. On this stage of open learning and increased access to information, if content does not also include localization that is achieved through participatory and constructivist processes, then "the freedoms [of expanded access to content] may feel new, but the tyrannies are as likely to be too familiar" (Hirsch & Silverstone, 1992, p. 34).

There are very few existing studies that have explored the practical involvement of knowledge-workers and their everyday activities related to OER localization. However, this study provides an evidentiary basis for numerous claims by providing rich narratives related to knowledge-workers' best practices, challenges, and strategies of OER localization in order to improve the utility of OER in Nepal.

This study also contributes to the groundwork of a nascent body of knowledge regarding localization of OER in the field of *non*-formal education (NFE) generally, since much of the

existing corpus of OER literature relates to use in formal education settings, particularly in the higher education arena. This study is also useful and relevant for understanding OER utility in *developing* countries since existing literature is dominated by a focus on OER use in developed country settings. Although the case studies shared in this dissertation particularly draw from Himalayan community centers of Nepal, this dissertation identifies core principles related to teaching and learning with OER. These principles, derived from evidence-based support, corroborate the theory that "localization unlocks the power of OER" and they contribute to further theory development regarding efficacious use of localization by OER practitioners in rural educational development settings across the globe.

As micro-learning centers in Nepal increasingly incorporate digital content and distribution mechanisms, the social role of communities and educational institutions is being redefined. The use of digital audio and visual content blurs the divide between those who are literate and non-literate. The use of new technologies presents a duality whereby rural villagers both resist and yearn to embrace these resources. In some cases, local people in the community mistrust technology as something threatening to ancient social structures and traditional social norms. In other cases, local people view it as a means to access critical health information, improve knowledge of agricultural best practices, and to open entrance to new markets to sell their crops sans middlemen.

Although Nepali formats for content collection, editing and distribution slowly proliferate; English is still the dominant language of OER resources. Most local people do not read English and have difficulty relating to the Internet content as a result. But, in some cases, interest in knowledge external to their village becomes increasingly attractive and villagers' perceptions of opportunity through technology may sometimes be reinforced. While some believe that access to knowledge in

rural villages will draw people away from their villages into more urban centers (a.k.a. brain-drain), other people believe that increased access in rural areas will allow young people to stay, advance in learning and expand online social networks while remaining home to care for their family farms (Martin, et al., 2007; James, 2004).

Until local people feel more comfortable with ICT and perceive it to be relevant to their immediate lives, the local experts will continue to be called on to validate and support customization of content designed for local people's needs. This may be the best way to bridge the past way of doing things with the new opportunities presented by 21st century tools. Respected elders and local ways of knowing become the intermediaries between the content available through new technologies and the ancient customs of villagers in rural Himalayan villages.

In conclusion, this study provides concrete evidence regarding the practical activities that knowledge-workers engage in to create localized OER for rural communities in Nepal. Salient principles that emerge from the unique data generated by this research lay the foundation for the theory that "localization unlocks the power of OER." The following core principles emerged during this study regarding content localization in Nepal: localization must involve locals; a community of practice bolsters localization; localization must be done in appropriate formats; and effective localization is directly proportional to understanding local contexts.

While these principles might seem simplistic, until now they have not been supported by current data regarding OER in nonformal education settings of Himalayan community centers. These principles are integral to theory development related the fields of OER and ICT in educational development settings of other rural communities across the globe. The findings of this study are rich

with implications of innovation and transition in rural epistemologies, pedagogies, and ontologies during the 21st century. Indeed, this dissertation reveals that Nepal stands on the brink of an educational and sociological sea change.

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Appendix A: Interview Protocol

Background Questions

Engage in introductions. In addition to name, title, age, and membership in the village/community, also explore details of why they are in their current role as a knowledge-worker and/or stakeholder of non-formal education in Nepal. Ask broad questions to develop an overview of the participant and a general sense of his/her lived experience in the field of non-formal education and community knowledge-sharing: For what time period have you been doing this? What motivated you? What prior education or experience do you have in this arena? What are your routines and activities in your current capacity? Who do you serve? Who do you work with? Do you have supervisor(s)? How did this center start? What philosophy governs this center?

Inquiry related to Question 1. How do Himalayan knowledge-workers *localize* content in community technology centers of Nepal?

Corollary questions. What are some of the procedures you use to localize content? What are some of the topics that villagers are interested in? How do you put the information in a good format for these rural villagers? What other activities have you done to localize content for people in your village? What do the local villagers understand is the purpose of the computers? Is it possible that you could help to create that content that is needed but does not exist? Are there things you do without the computers to share knowledge? In what formats do you share content with these villagers? What benefit do the villagers believe you can bring them with this content? What other information do people seek? In what ways do you customize the information that you get from Kathmandu (or other hub sites)?

Inquiry related to Question 2. To what extent do Himalayan knowledge-workers feel that they *localize* content according to their own definitions of localization?

Corollary questions. What do you understand by the term *localization*? According to your own definition, to what extent do you feel that you localize? In what ways do you feel that you are involved in localization of content? How do you identify interests and needs of learners? How do you know if you've responded to their needs? Are there times when you decide not to localize? Please describe. Are you aware of localization activities done by other centers? Are you impacted by what they do (or don't do)?

Inquiry related to Question 3. What strategies can improve localization of content in Himalayan community centers of Nepal?

Corollary questions. What challenges do knowledge-workers face to find the content that villagers are looking for? What principles must be observed in order to effectively localize content? What challenges are posed by technology when localizing content? How do they know if content works for learners? How does localized content reach the learners? Do administrators help or hurt in the process of localization? What is recommended to improve and increase localization in order to benefit more learners? What would you like to do in your center that you are unable to do under the present circumstances? Are there information or knowledge needs the villagers have that are unable to be met in your center? Do you have any insights on how to better respond to the needs of villagers? What resources are available to help you overcome some of your challenges? What do you use? What resources (human, technical, intellectual) do you wish were available but are not yet provided? Do you have any other insights or experiences you'd like to share? Do you know of anyone else who may like to share insights with us?

Appendix B: Interview Roster

Individuals Interviewed, Respective Affiliations, and Titles		
Presented here in order of appearance in the dissertation		
Individual Name	Affiliation	Title
Manohar Bhattarai	High Level Commission for Information Technology (HLCIT)	Vice-Chair of Apex Government Ministry
Tuladhar Bhagawan	Community Learning Center (CLC) of Ward 18, Kathmandu	Director, Non-Formal Education
Subir Pradhanang	Open Learning Exchange (OLE) of Nepal & FOSS Nepal President	Program Manager & Software Developer
Rohit Pradhan	World Vision International (WVI) of Nepal	Director, Non-Formal Education
Kalpana	Gorkha Youth-Managed Resource Center (YMRC) sponsored by TMUC	Youth Manager & Knowledge-Worker
Mira Kunwar	Gorkha Youth-Managed Resource Center (YMRC) sponsored by TMUC	Youth Manager & Knowledge-Worker
Ramita Shrestha	Sankhu Youth-Managed Resource Center (YMRC) sponsored by NITC	Youth Manager & Knowledge-Worker
NaniHira Maharjan	Community Learning Center (CLC) of Ward 18, Kathmandu	Literacy Trainer & Knowledge-worker
Deepak Thapa	Maskichaab Community Center (satellite center of Gorkha YMRC)	Youth Manager & Knowledge-Worker
Bishnu Adhikari	CHOICE Humanitarian of Nepal (Supported by International NGO)	Director of Nepal Programming
Dhana Lama Bahadur	Buddhist Community Education Cooperative	Director, Non-Formal Education
Hemraj Dhakal	Tulasi Meher UNESCO Club (TMUC) Gorkha District Office	Program Manager for Gorkha District
Judda Gurung	High Level Commission for Information Technology (HLCIT)	Full-Time Member of Commission
Rudra Lal Mulmi	Tulasi Meher UNESCO Club (TMUC) Kathmandu Central Headquarters	Founder and Director of National NGO
Chhapsang Lama	Buddhist Community Education Cooperative	Director, Non-Formal Education
Shrutee Shrestha	Community Development Network Volunteer	Intern & Research Team Member, BYU
Sunila Shrestha	Sankhu Youth-Managed Resource Center (YMRC) sponsored by NITC	Youth Manager & Knowledge-Worker

Devi Shrestha	Sankhu Youth-Managed Resource Center (YMRC) sponsored by NITC	Youth Manager & Knowledge-Worker
Prem Kunwar	Gorkha Youth-Managed Resource Center (YMRC) sponsored by TMUC	Youth Manager & Knowledge-Worker
Dhiraj Maskey	Tulasi Meher UNESCO Club (TMUC) Gorkha District Office	Director, TMUC Gorkha District
Urbashi Thapa	Bungamati Information Technology Center (BITC)	Program Manager & Knowledge-Worker
Surya Laxmi Tuladhar	Bungamati Information Technology Center (BITC)	Assistant Manager & Knowledge-Worker
Amathi Rudabasi	Bungamati Community School (liaison with Bungamati Information Tech. Ctr.	Director, ICT and Community Outreach
Ram Thapa	Maskichaab Community Center (satellite center of Gorkha YMRC)	Youth Manager & Knowledge-Worker
Raju Shakya	Ramkot Village Development Committee for Community Center	VDC Representative & KnowledgeWorker
ShaviHari Khanal	Ramkot Village Development Committee for Community Center	VDC Representative & KnowledgeWorker
Pal Krishna Pandey	Pelakot Galyang Community Center & Village Development Committee	VDC Representative & Respected Elder
L.P. Mali	Sankhu Youth-Managed Resource Center (YMRC) sponsored by NITC	Youth Manager & Knowledge-Worker
Krishna Pandey	High Level Commission for Information Technology	IT Consultant HLCIT & Tribhuvahn Univ.
Jitendra	High Level Commission for Information Technology	Open Technologies Resource Center
Sanjana	Rural Education and Development (READ) Nepal	Program Manager & Content Supervisor
Tara Pandey	Community Development Network Volunteer	Intern & Research Team Member, BYU
Sanjeep K.C.	Community Development Network Volunteer	Intern & Research Team Member, BYU
33 People	**16 Organizations**	

Appendix C: Artifact Examples
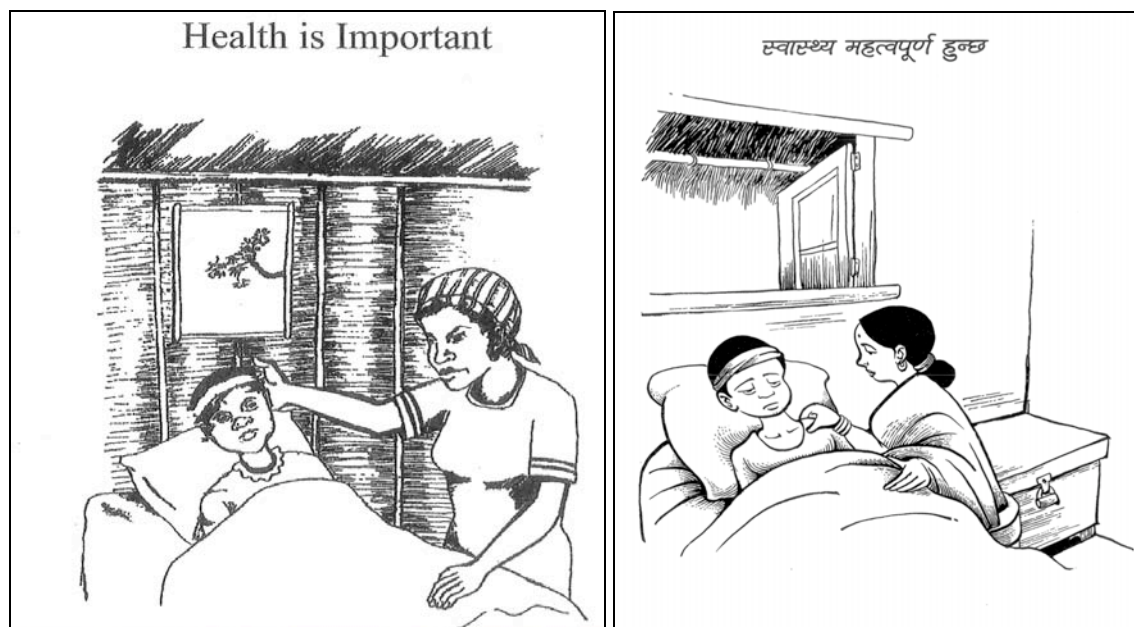
These are Nepalese localizations of a health-literacy manual (above) and a micro-enterprise manual (below). The Nepalese localizations incorporate customization of language (Nepali), culture/tribe (Newar), and religion (Hindu). The Hindu mother (with a "tika" on her forehead) touches the boy on the shoulder instead of the head because that act was considered "profane" by Nepalese standards. Below, women's cooperatives learn to manage savings for microenterprises.
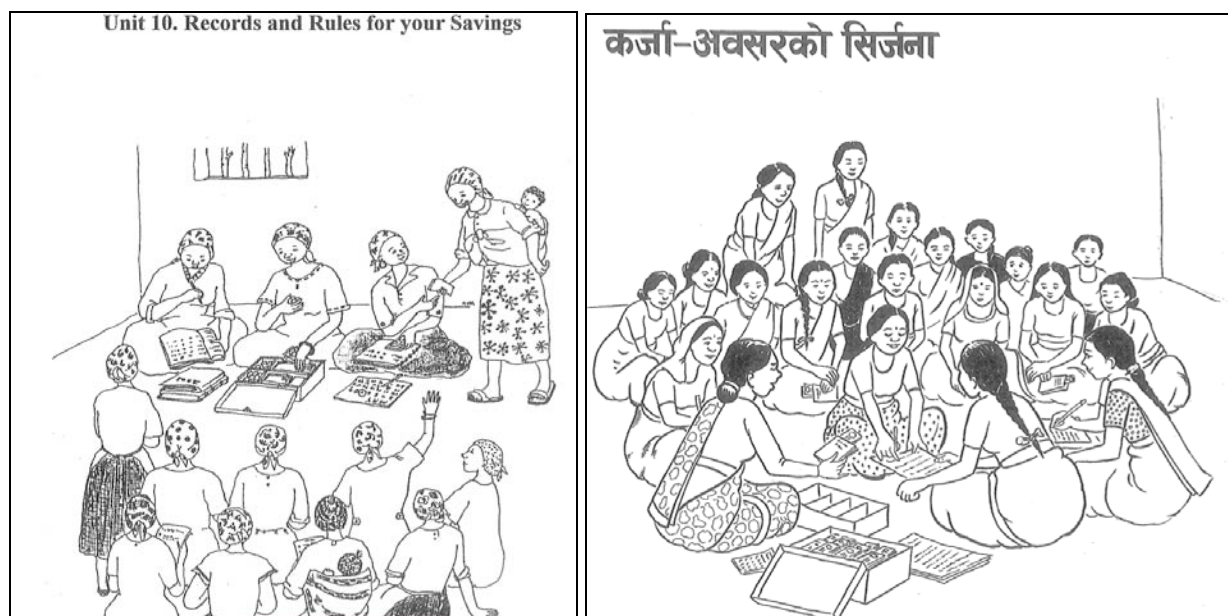
Appendix D: Focus Group Discussion Rosters

Focus Group Discussion I	
Held at Tulasi Meher UNESCO Club (TMUC) Headquarters Kathmandu, Nepal 22 May 2010	
Name	**Organization**
Raju Shakya	Ramkot VDC, Kathmandu
Shavi Hari Khanal	Ramkot VDC, Kathmandu
Maheswor Sharma	District Education Office, Lalitpur
R.P. Lamichane	District Education Office, Lalitpur
Puspa Raj Poudel	UNESCO Nepal
Amrit Subedi	Tribhuvan University
Dhana Bahadur Lama	The Himalayan Innovative Society
Chhapsang Lama	The Himalayan Innovative Society
Bhagwan Ratna Tuladhar	CLC Tamsipakha – Ward 18, Kathmandu
NaniHira Maharjan	CLC Tamsipakha – Ward 18, Kathmandu
Mahesh Bist	World Vision International
Sushil Acharya	Chapagaon, Lalitpur
Sanjeep K.C.	Community Development Network
Krishna Prasad Ayal	Kalika Youva Club, Syanja
Nanda Prasad Pandey	Sanga Community Center
Narayan Bhandari	Nava Durga Yuva Club, Syanja
Sayara Pariyar	Shrijana Bikas Kendra
Bal Krishna Pandey	Pelakot Galyang VDC
Gita Pandey	Pelakot Galyang VDC
Tara Pandey	Pelakot Galyang VDC
Simone Galimberti	CCS Italy
Shanti Chaudhary	Shrijana Bikas Kendra
Laxman Bhusal	Jan Jagriti Yuva Club
Puspa Bhusal	Jan Jagriti Yuva Club
Pramila Shakya	Seto Gurans NCDX
Tiffany Ivins	Brigham Young University
Shrutee Shrestha	Community Development Network
Rudra Lal Mulmi	Tulasi Meher UNESCO Club Headquarters
Rajendra Maharjan	Tulasi Meher UNESCO Club Headquarters
Rohit Pradhan	World Vision International (Nepal Hqtrs)
Sudha Lal Mulmi	Self Education for Underprivileged Children
Dharma Adhikhari	College of Development Studies
Surendra Shahi	College of Development Studies

Hem Raj Dhakal	Tulasi Meher UNESCO Club (TMUC) Gorkha
Mira Kunwar	Tulasi Meher UNESCO Club (TMUC) Gorkha
Kalpana Kattel	Tulasi Meher UNESCO Club (TMUC) Gorkha
Deepak Thapa	YMRC Maskichaab, Bungkot, Gorkha
Manohar Karki	SEFU, Lalitpur
38 people	**22 organizations**

Focus Group Discussion II	
Held at Government of Nepal Headquarters High Level Commission for Information Technology (HLCIT) Singhadurbar, Kathmandu, Nepal 23 May 2010	
Name	**Organization**
Manohar Bhattarai	High Level Commission for I.T. (HLCIT)
Judda Gurung	High Level Commission for I.T. (HLCIT)
Jitendra Kumar	Open Technologies Resource Center, HLCIT
Krishna Pandey	High Level Commission for I.T. (HLCIT)
Sanjana	OKN, Rural Education Development (READ)
Subir Pradhanang	FOSS Nepal; Open Learning Exchange (OLE)
Jwalanta Shrestha	Open Technologies Resource Center
Sushil Acharya	Open Technologies Resource Center
Tiffany Ivins	Brigham Young University
Shrutee Shrestha	Community Development Network
Sanjeep KC	Community Development Network
Tara Pandey	Community Development Network
Sudip Aryal	One Laptop per Child (OLPC) Initiative
Ramesh RS	High Level Commission for I.T. (HLCIT)
14 people	**8 organizations**

Appendix E: Site Visit Detail

Site Name	Sponsor	Ruralness / Location	Capacities
Tamsiparkha Community Learning Center (CLC) based in Ward 18	UNESCO	Semi-urban Kathmandu (vehicle access)	2 FT trainers, 1 digital camera, 2 computers, Internet, 6 sewing machines
Sankhu Rural Information Technology Center (RITC)	NITC	Semi-rural (2 hrs from KTM, vehicle access)	4 PT trainers, 4 computers, one 4-in-1 machine, 1 digital camera, speakers, Internet
Gorkha Youth-Managed Resource Center (YMRC)	TMUC	Semi-rural (6 hrs from KTM, vehicle access)	2 PT trainers/managers, 4 computers, 2 digital cameras, 1 printer, no Internet
Bungamati Information Technology Center (BITC)	HLCIT	Semi-rural (2 hrs from KTM, vehicle access)	1 FT & 2 PT managers, 4 computers, 1 digital camera, intermittent Internet
Maskichaab Community Center (CC) – Village Development Office	Community (local)	Rural (9 hrs from KTM, foot travel required)	2 PT trainers/volunteers, 1 digital camera, 1 flashdrive, no Internet, no electricity
Ramkot Community Center (CC) – Village Development Office	WVI	Semi-rural (2 hrs from KTM, vehicle access)	1 FT employee/trainer, 1 computer, electricity, no Internet
Pelakot Community Center – Village Development Office & nearby computer lab	Community (expat)	Rural (14 hrs from KTM, foot travel required)	2 PT volunteers, 1 paid trainer at computer lab, occasional electricity & Internet

* Sites are given in the order presented in Chapter 4 with regard to the localization continuum.

** All distances given are approximate. They reflect a combined travel time of both vehicle and foot-travel as experienced by the research team from the starting point of downtown Kathmandu (KTM). Locals may sometimes encounter a longer vehicle travel time since public vehicles stop more frequently; however, foot travel may be quicker for locals than for foreigners who are not acclimated to the altitude nor the terrain.

Appendix F: Site Visit Observation Protocol

Name of Center_____ Sponsoring Organization_____Village/District_____

1	How many people come to your center per day?
2	What activities are currently happening here? What activities are sponsored by your center and what activities are directly by the individuals themselves?
3	What skill level do these people have? (reading, writing, mathematics, computers)
4	What is main language of instruction? (Nepali, Newari, English etc.
5	What are the demographics of the people who come here? (age, gender, profession)
6	What locations do these people come from? (hills, village etc.)
7	For what reasons do people come to learn in your center? (e.g., Email, internet searching, job search, business information, health)
8	What are the biggest daily challenges for your clients? (e.g., financial, political, family, health) How does your center respond to their specific needs?
9	What other topics of interest would your clients be interested in? (e.g., agriculture, small business, home economics, health/nutrition, entertainment/culture)
10	In what ways do you customize content or create content for the needs of those who come to your center (e.g., localization, adding culture or context to the existing content)
11	What is the electricity connection like in this area? (Irregular? Regular? Expensive? Approximate cost per month?)
12	What is internet connectivity like in this area? (Irregular? Regular? Expensive? Approximate cost per month?)
13	What are attitudes of people in your community toward computers? (Positive? Negative? Indifferent? Why?)
14	Have programs like this happened before? (Please describe. Are they still happening?)
15	Do you currently maintain any connection to the local schools? (What? How? Who facilitates the linkage?)
16	Is there an internet café (cyber café) in this area? (What is the charge per hour? How regularly is it used? By whom?)
17	Would there be interest and/or a market if your center also hosted a cyber café in the evenings? (What would you charge per hour?)
18	What equipment do you currently need in order to do computer training here in your center? (Can you cover part of these costs?)
19	What is an ideal number of staff that you could use to do this project? (What roles would they play?)
20	What is the salary or weekly/monthly pay that you would give staff that are doing the computer training here?
21	How is it possible to involve community members in managing this activity? Is there a forum to talk about this? What does the community think about your center?
22	How do you get feedback from the users of your center? Is there anything else you'd like to talk about regarding activities in your center?

Appendix G: Site Visit Photos

Kathmandu: A land of temples (Buddhist and Hindu). Nepal's mystic mountains (above), and rugged peaks (below) present formidable challenges to accessing resources, including education.

Over 75% of Nepal's 28M people depend on agricultural livelihoods. Most villages are rural and mountainous. Women and girls disproportionately bear the economic and domestic workloads.

Tamsipakha Community Learning Center (CLC) in Ward 18 in Nepal's Kathmandu capital. Left: Literacy learners in an inner-city class. Right: Electricity and ICT proliferate in urban areas.

Sankhu Youth-Managed Resource Center (YMRC) prioritizes content localization: domestic housewives enjoy searching information. Right: Customized content posted on wall-newspaper.

The Community Youth Club (CYC) is active with youth from Sankhu village. Above Left: shoes of CYC members at YMRC. Right: Sankhu knowledge-workers and youth trainers in center.

Gorkha Youth-Managed Resource Center (YMRC): Knowledge-workers learn how to use digital cameras, computers, & other ICT to enable information access in rural villages. Besides learning technical skills to utilize ICT, youth leaders also learn techniques to customize content.

Gorkha youth discuss tensions regarding authority and control to localize content at the YMRC.

Bungamati Information Technology Center (BITC): Knowledge-workers celebrate a new digital camera to support content localization; low-tech laptops are piloted by rural youth leaders.

Maskichaab Village Center: Rural villagers await content from 2 busy knowledge-workers.

Ramkot Community Center: Villages surrounding the center are spread across mountaintops and mountain-sides; Ramkot children are enthusiastic for improved learning opportunities.

Galyang Pelakot Village Center: community members gather to discuss possibilities for accessing information in their remote village through support from knowledge-workers and ICT.

Mountain homes are reachable only by foot; rural villagers access content using mobile phones.

Focus Group Discussions: with practitioners (left); with government at HLCIT office (right).

Above: localization discussion; Below: rural practitioners(left) & research team members (right).

Appendix H: Vita of Tiffany Zenith Ivins

EDUCATIONAL BACKGROUND:

Aug 2006 – Apr 2011	**PhD Candidate** (Brigham Young University) Instructional Psychology & Technology Dissertation: *Localization of Open Educational Resources in Nepal: Strategies of Himalayan Knowledge Workers.* Committee Chair: Dr. David Wiley
Sep 2000 – Mar 2003	**Masters of Science** (University of Oxford, England) International & Comparative Education Dissertation: *The Conundrum of Collaboration: Female Literacy for Rural Well-Being in Nepal* Committee Chair: Dr. Colin Brock
Aug 1993 – Apr 1999	**Bachelors of Arts** (Brigham Young University) Humanities & English Literature, Cum Laude Intensive Study Abroad: London, England together with Dr. Ray Hillam & Dr. Arthur Bassett **Minor Degree** International Rural Development. Practicum**:** 2 summers interning in Mdantsane, South Africa (1998, 1999); 18-month service mission in Northern Luzon, Philippines (1996-1997)
Aug 1997 – Aug 1998	**TESOL & ABE Diploma** (Rhodes University, South Africa) Practicum in rural Eastern Cape

PROFESSIONAL DEVELOPMENT:

Nov 2000 – Present	Community Development Network (Oxford, England) **International Programs Consultant** Aggregate stakeholders for community ICT initiative focused on access to open educational content; train trainers on prototype Environmental-Literacy and Peace-Literacy Manuals for grassroots organizations and local NGO leaders in Philippines, Nepal, Sudan and Kenya; train field facilitators in PRA methods; build capacity of social mobilizers for community-led change.
Aug 2006 – Apr 2008	Center for Open and Sustainable Learning (Logan, Utah) **Program Manager & Content Developer** Facilitate localization of content for educational programs in rural areas; conduct trainings for international partners to access/develop open courseware; build capacity of local organizations to create, modify and adapt learning tools for lower-literates and remote, disenfranchised groups.
Jan 2005 – Mar 2007	World Education International (Boston, Massachusetts) **International Programs Officer** Managed literacy programs in South Asia (Pakistan, Nepal, Bangladesh) with particular focus on rural women; conducted participatory trainings for literacy staff & NGO facilitators; built capacity of district government officials and NGO leaders to plan, manage, & execute literacy programs.
Aug 2002 – Apr 2004	University of Utah (Salt Lake City, UT) **ESL Instructor & Cultural Integration Consultant** Developed ESL curricula for 4 classes, created training videos; initiated *Cultural Integration Initiative* for immigrants/refugees; trained university interns in participatory pedagogies for ESL.
Jul 1999 – Aug 2000	ProLiteracy Worldwide (formerly Laubach Literacy International) (Syracuse, New York) **International Programs Officer** Trained trainers on prototype Environmental-Literacy and Health-Literacy Manuals for local NGO leaders; trained & assessed community groups in Philippines, Thailand, South Africa and Nepal.

RELATED PUBLICATIONS, PRESENTATIONS & RESEARCH:

Ivins, T. (2009) Microfranchising MicroLearing Centers: A Sustainable Model for Expanding Right to Education in Developing Countries? *Journal of Asynchronous Learning Networks*, Vol. 12: Issue 1, IRRODL Special Issue. (Peer Reviewed.)

Ivins, T., Williams, D., Davies, R. (2010) *Evaluating OER in Nepal.* Presentation: American Evaluation Assn Conf (Nov 2010).

Ivins, T., Lee, J. (2010) *OC4D: Increasing Access to Localized Content in Nepal.* CIES Conf Presentation (March 2010).

Ivins, T., Spence, M. (2009) *Creating Self-Reliant Telecenters in Nepal.* Economic Self Reliance Conf: BYU (Nov 2009).

Ivins, T., Shrestha, R. (2007) *OER in Nepal Case Studies of Localization in Nepal.* Open Education Conference (Sept 2007).

Ivins, T., Lee, J. (2007) *OER in Nepalese Villages.* American Education and Communication Technology (AECT) (Mar 2007).

Ivins, T. & Nabi, R. (2006) *Literacy Retention Study in Pakistan.* Education Reform Assistance Program (USAID): Islamabad.

Ivins, T. & Nabi, R. (2006) *Sustaining Literacy Skills: Viability of Literacy Resource Centres in Pakistan* (USAID): Islamabad.

Ivins T. and Nabi R. (2005) *Cultivating a Culture of Literacy: an Evaluation of Family Reading Program in Pakistan* (USAID).

Ivins, T., Ziyenge, N. & Sharma, M. (2003) *Situation Analysis of ProLiteracy Programs in Nepal.* TMUC: Kathmandu,Nepal.

Ivins, T. (2001) *Impact of Female Literacy on Rural WellBeing in Nepal.* Oxford University Master's Dissertation: Oxford:UK.