

## LOCAL VOICES ENHANCE KNOWLEDGE UPTAKE: SHARING LOCAL CONTENT IN LOCAL VOICES

David J. Grimshaw

[David.Grimshaw@practicalaction.org.uk](mailto:David.Grimshaw@practicalaction.org.uk)

Lawrence D. Gudza

[Lawrenceg@practicalactionzw.org](mailto:Lawrenceg@practicalactionzw.org)

Practical Action  
Schumacher Centre for Technology and Development,  
Rugby, CV23 9QZ  
UK

### ABSTRACT

New ICTs can provide new opportunities for knowledge sharing and uptake, but may also reinforce existing power hierarchies and exclusionary practices. This paper explores ways in which the balance of power may be redressed via the use of local voices producing local content in a way which respects local choices and where the intervention is shown to enhance livelihoods.

Practical Action has put people first for over forty years. How can people truly be put first when introducing a new information and communications technology such as “podcasting”? A brief review of the background to a podcasting project in Zimbabwe, leads on to a discussion of the development problems being addressed, the choice of technology, the outcomes evaluated and a discussion of implications for policy and practice.

Many ICT projects face the challenge of sharing information with people who have little experience of ICTs, low levels of literacy, little time or money, and highly contextualized knowledge and language requirements. Observations in Peru (Talyarkhan et al., 2005) became the inspiration for innovative work in Zimbabwe which provides the main evidence discussed in this paper in relation to creating enhanced livelihood opportunities for people living in remote rural areas.

The paper discusses the proposition that the use of technologies accessible via voice and local languages support knowledge sharing and minimize impact on power relations in the community. A framework is suggested which shows how the balance of power relates to both the choice of media and the choice of technology. The final section of the paper explores the policy and practice implications of the findings and concludes that hand held voice devices can make a substantial contribution to improved livelihoods in remote rural areas.

### 1. TECHNOLOGY AND DEVELOPMENT CONTEXT

The purpose of this paper is to explore the proposition that the use of technologies accessible via voice and local languages support knowledge sharing and minimize impact on power relations in the community. This proposition is explored by means of a case study set in rural Zimbabwe. Before exploring the case the relevant literature on technology and development are reviewed leading us to the notion that questions about ICT investment must be located within the contexts in which people are trying to bring improvements to their lives.

It might be tempting to think that ICTs are a special case illustrating the tension between participative citizenship and the reinforcement of existing power hierarchies and exclusionary practices. Rather it might be an enduring quality of technology per se which can serve to disturb traditional practices and cultures in the name of “progress”. As people engage in the use process of new technologies there is an important stage of learning and adaptation. The end result may be forms of knowledge associated with a particular technology that create social organisations independent of those envisaged by the technology designers (Scarborough and Corbett, 1992).

In the 1960's, long before the advent of the microprocessor, snowmobiles were introduced into the Lapp community. Peltó (1973) reports that when reindeer sleds were replaced by snowmobiles the older men, who lacked the physical strength to ride the snowmobiles, lost their authority and status in the community. Importantly the newly introduced technology also led to a dependence on imported oil and spare parts.

So, technology is far from neutral in relation to both development and power. These relationships have been apparent long before the introduction of ICTs. As the historian David Edgerton (2006) describes, while the West obsesses about the increasing 'pace of innovation', most change is taking place by the transfer of techniques from place to place'. Technological systems – the way things are used, abused and controlled – are political. There are reasons why they end up the way they do, and there are ways in which we can talk about better or worse technologies. We can judge new technologies according to the extent to which they lock people into certain systems (as, for example, GM crops and centralised nuclear power do) or provide an open platform for new sorts of use (for example, Linux or micro-renewable energy) (Stilgoe, 2007).

Technologies carry with them some definition of social need and some promise of a technical fix. They define both a problem and a solution. And the systems of research, innovation and regulation of which they are a part can harden this definition. So while in the UK we may take the system – transport, maintenance, markets and a stable economy – for granted, in a developing country, this needs close scrutiny. Rather than starting from the technology, we need to start from the local context and think about alternatives (Grimshaw et al., 2009).

Edgerton (2006) argues that the politics of new technologies have tended to narrow down consideration of alternatives. 'Alternatives are everywhere, though they are often invisible.' Public discussion reveals these alternatives. Technologies do not force people to do things, but as they open new doors, there is a danger that old ones can close. While good intentions are focused on ICT and development, they may lose sight of what else can more easily benefit poor people.

The drivers for increasing access to knowledge via ICTs are often measured by the number of people with access to the Internet. With only 24.7% of the global population having such access and 8% of the population of Zimbabwe (Internet World Statistics 2009) this indicator can be a powerful motivator for increasing access yet at the same time it needs to be recognized that knowledge also contains embedded power. We will return to the concept of power later in the paper but first it is necessary to be clear about the relationship of notions of development to the use of ICTs and knowledge sharing.

The concept of 'development' has been evolving since its origins after the Second World War. Sachs (1992) dates the 'age of development' as beginning when President Truman at his inauguration described regions in the South as 'underdeveloped'. International organisations such as the World Bank and the United Nations (UN) were established to support international relations and their agendas have influenced the discourse on development ever since.

The priorities of the international development community have shifted over the years. From a focus on economic development and growth, international bodies have begun to focus on poverty as a multidimensional phenomenon and to acknowledge the various contributory factors to poverty such as a lack of access to markets and services or vulnerability to shocks. Communication has consistently been central to the work of development agencies, but in recent years the recognition of information and knowledge as contributing to growth, as well as the vogue for knowledge management and the massive expansion of ICTs have highlighted the importance of knowledge for development.

People who held a philosophical belief in freedom started the free software movement. Their position can be summarized as, “Free software is a matter of freedom: people should be free to use software in all the ways that are socially useful. Software differs from material objects - such as chairs, sandwiches, and gasoline - in that it can be copied and changed much more easily. These possibilities make software as useful as it is; we believe software users should be able to make use of them” (GNU Project).

Recent writing in the development literature has discussed the concept of freedom. Most notably Amartya Sen (1999, 297) views development as a process of expanding the substantive freedoms that people have. The founder of ITDG (now Practical Action) E.F. Schumacher (1973, 248) said that, “only in the service of truth is perfect freedom”. For the purpose of this paper we shall use the definition of development as freedom: “...a process of expanding the real freedoms that people enjoy” (Sen, 1999).

Perhaps more famous for his espousal of intermediate technology the key question in readers minds might be, “how can information and communications technology be consistent with the concept of intermediate technology?” Schumacher discussed the difference between mass production and production by the masses. He took the view that, “The technology of production by the masses, making use of the best of modern knowledge and experience is conducive to decentralization, compatible with the laws of ecology, gentle in its use of scarce resources, and designed to serve the human person instead of making him the servant of machines. I have named it intermediate technology to signify that it is vastly superior to the primitive technology of bygone ages but at the same time much simpler, cheaper, and freer than the super-technology of the rich” (Schumacher, 1999, 128). Grimshaw (2006) undertook a comparison of FOSS and proprietary software with intermediate technology as defined by Schumacher above. This showed that FOSS is, according to these criteria, an intermediate technology. The works of Schumacher are generally recognised as spawning the appropriate technology movement. More recently Reijswoud (2009, 14) applies the principles of appropriate technology to increase the effectiveness of ICT in development and concludes that “participatory and consultative process guide the definition of systems that are low-tech but appropriate”.

Many international initiatives have been established to harness ICTs for development on a global scale, in particular since the publication of the World Development Report on Knowledge for Development (World Bank, 1998). These include the Global Knowledge Partnership (founded in 1997), the DOT-Force (created in 2000) and the UN ICT Task Force (created in 2001). The International Telecommunication Union (ITU) has hosted an international summit on the Information Society in 2003, the second phase of which will take place in 2005. These initiatives aimed to build partnerships between civil society, the public and private sectors to harness ICTs for development (Chapman et al., 2002).

There is a consensus that ICTs can play an important role in development, for example by connecting people to more accurate and up to date information, equipping them with new skills or connecting them to an international market. However, there is concern that the ‘digital divide’ is increasing the gap between the ‘information haves and have nots’ and this is the preoccupation of many of the initiatives established to address ICTs for development. In recent years, many studies have been published, particularly by practitioners in the development field, on the use of ICTs for development. The term ‘ICTs for development’ incorporates a variety of different uses of ICTs, for health, e-governance, agriculture, advocacy and many more.

The gaps that exist in the literature about connecting the first mile either represent areas where there has been little convincing evidence collected to date or where authors cannot reconcile their perspectives on the role of ICTs in development. Previous literature reviews in this field have commented on the promotional nature of literature, the paucity of

baseline and evaluation studies to date, the relatively recent emergence of frameworks for evaluation and the emphasis on telecentre projects and literature about Africa (O'Farrell et al., 1999; Adeya, 2002).

ICT for development projects are criticised for failing to build on existing systems or work in a participatory way. Critics argue that 'top down' projects, driven by the donor agenda, fail to achieve local ownership (Gumicio Dagon, 2001; Lloyd Laney, 2003). The concept of the "*design-reality gap*" (Duncombe & Heeks, 1999) highlights the distinction between the context in which an ICT project or application is designed and the context of its use in developing countries. In many cases projects are driven by the donor agenda, which has a short term horizon and may not recognise or be able to address the multi-dimensional causes of poverty due to a narrow focus on donor objectives (Stoll et al., 2001). Gumicio Dagon (2001) is especially critical of the role of donors and their focus on large scale projects:

*"The international donor community is still reluctant to acknowledge 30 or 40 years of failures and millions down the drain because of ill-planned macro programmes. The eagerness to go fast, to show short-term results, and to extend coverage to large numbers of people has actually backfired"* (2001, p. 11).

For him, donors' concern with scale serves to multiply models that clash with culture and tradition and paralyse communication, instead of linking communities and facilitating exchanges. Mansell (2006) makes the point succinctly by saying: "it is essential to locate questions about ICT investment within the contexts in which people are trying to bring improvements to their lives.

## **2. CASE STUDY OF ENHANCING LIVELIHOODS IN MBIRE, ZIMBABWE**

Improvement to the lives of those living in Mbire, Zimbabwe was the driver for a project which used ICT to effectively share knowledge. The first part of this case study narrative discusses the livelihoods context prevailing for the people living in the area. After making this context clear we go on to discuss the ICT used and the lessons learnt from the case.

### **2.1 The Livelihoods Context**

Mbire in Lower Guruve is situated in the semi arid Zambezi valley, a low altitude zone, characterised by frequent droughts and occasional floods. The area is suited to the cultivation of drought tolerant crops supported by livestock production. The current human population is estimated at 20,300 people with an average household size of six. The approximate livestock numbers are: cattle (28,170), donkeys (1,981), goats (54,019), sheep (6,655) and pigs (1,219).

A survey based study carried out by a local non-governmental organisation Lower Guruve Development Association (LGDA) revealed that on average, 20% of the livestock, particularly cattle, succumb to trypanosome parasites transmitted by the tsetse fly, and is lost each year. The study also showed that 90% of the farmers in Mbire District depend on animal draught power for cultivating their lands. There is scope in improving animal draught power performance through improved livestock management with emphasis on improved feeding practices.

Knowledge sharing is recognized to be a two-way process. Yet few genuine attempts have been reported of ways of capturing local knowledge. A wealth of indigenous knowledge exists among the communities and has done for generations. This is unpublished knowledge, which is usually passed on from one generation to the next by word of mouth; and the

challenge is harnessing and digitising it for sharing among other community members for the benefit of all.

## 2.2 Research Methodology

The development project was initiated as a way of enhancing livelihoods in this semi arid remote rural area that has no access to electricity, mobile phones, or FM radio. The main objective of the project was “to test out the effectiveness of using podcasting to deliver development knowledge products in local voices and language to poor communities in Mbire of Zimbabwe”. Thus the unit of analysis of the research was “podcasting technology”. The secondary objectives of the research were the following:

- To assess the economic benefit of the knowledge delivered.
- To understand the effectiveness of working with infomediaries.
- To improve the timeliness of information provision.
- To assess the acceptance of the technology by the communities, institutions, and other bodies from a social, cultural and economic point of view.
- To observe how the technology affects power relations in the communities.
- To determine new business models that might be introduced.

Since the research was by its nature embedded within a development project there were some limitations imposed on the research design. We were not starting from a clean sheet of paper; rather we were adding a component to an existing project. Within that limitation our approach was to use an action research methodology (Wood-Harper, 1985). In this approach the researcher is actively associated with the outcomes because he is a participant. This approach raises ethical issues in relation to the possibility of alignment of the researcher with a particular stakeholder group. However, this was largely mitigated by the comprehensive involvement of all local stakeholders and the role undertaken by the Lower Guruve Development Association as coordinator of all activities in the case study geographical area.

Action research can properly be thought of as a sub-set of case study approaches (Yin, 1994). As such it has the advantage of capturing reality in detail. However, the disadvantage of the approach is that it is difficult to collect similar data from a range of case studies and hence there are some limitations on the generalizations that can be made from this case.

## 2.3 Data Collection

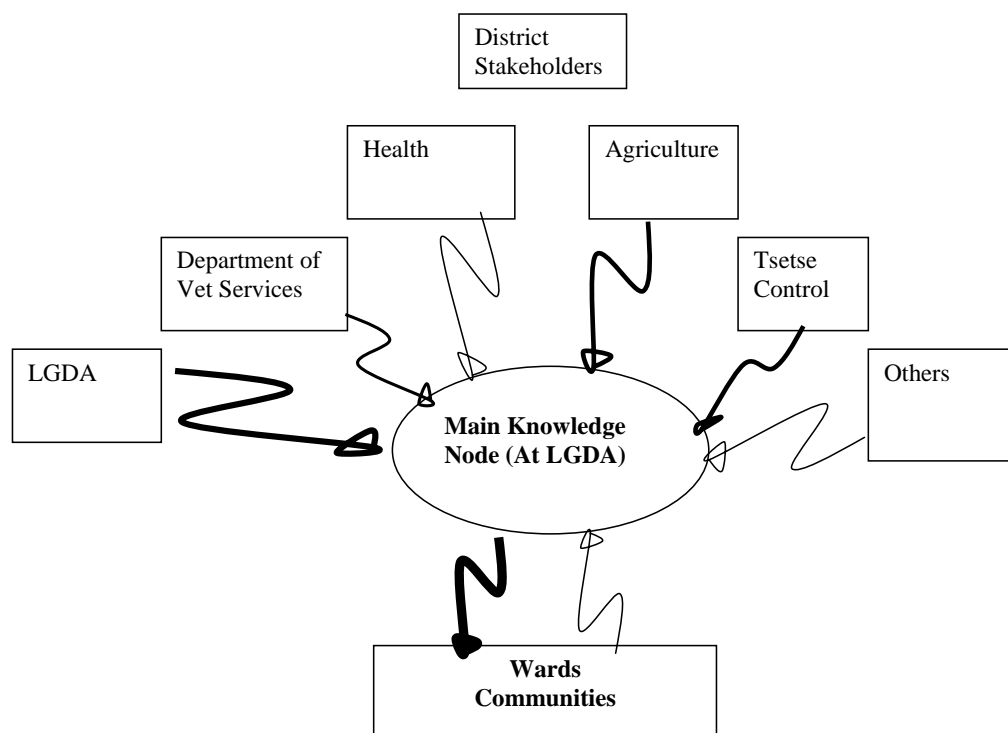
The main data collection tools used was survey, interviews, and participant observations. At the start of the research we carried out a baseline survey to help us understand the social, economic and cultural characteristics of the target district population. Interviews were conducted with intermediaries, agricultural extensionists, local civil society organisations and local farmers to identify the needs for information and discerned the most useful types of information that needed to be provided and who the key users of that information were.

The baseline survey was used to help us identify the size and nature of the research study. Specifically we could then decide on number of people/devices to be involved, the particular technology to use, the nature and characteristics of the communities. Five of the district's seventeen wards (7, 8, 9, 15, and 17) were targeted for the research. Each ward had two community-based extensionists (animator) and one animator in each ward was provided with the devices. Training on their technical operation and knowledge dissemination methods was given. Practical Action, together with the local extension agents provided appropriate content in a variety of formats.

Prior to our intervention, each development agent working in the district produced and disseminated information and knowledge through systems based on their own objectives. The information systems of the agents are often dissimilar in terms of how data is collected, processed, formatted and distributed. The language used is often not understood by all in the communities because of varying literacy levels. For example, Mbire's literacy level is 75%, which is low compared to the national literacy average of 90.7%. Very often, development agents forget or ignore the importance of communities' literacy levels when packaging their content. There is need to harmonise ways of being inclusive. A lack of content standardisation can be a source of confusion for the target communities, as, apart from the language complications, content presentations vary from one development agent to the next. Practical Action worked to harmonise knowledge collection, packaging and dissemination among communities in the district and building capacity of all partners and communities to be able to follow this practice. The social, cultural and literacy sensitivities of the communities are taken special care of during the process of content recording, packaging and dissemination.

Lessons learnt from the Rural Urban Information System (Talyarkhan, 2005) project in Cajamarca, Peru showed that various cooperating partners develop and disseminate information through systems based on their own objectives. The information systems of the cooperating partners involved in the project are often dissimilar in terms of how data is collected, processed, formatted and distributed (see Figure 1). Our aim was to influence the practice of others through working together with district development agents, infomediaries and communities to establish a knowledge node in the district. Finally, among the community elders is a wealth of indigenous knowledge that remains untapped, which knowledge if fused with scientific knowledge and shared among communities in local voices and language, can fill the knowledge gap that exists among the communities.

**Figure 1 Knowledge Stakeholders**



The Mbire study used devices that are in production and commonly available to play music and videos. The testing had some clearly specified objectives that served to identify lessons that can be used both in further refining the devices and in spreading good practice in the effective use of the technology in poor remote rural areas.

## **2.4 Analysis of the Case Study**

The analysis of the case has been done in two parts: first by constructing “explanations” around the context (Yin, 1982); second by “repeated observations” made initially in the baseline survey and then at the end by an evaluator who conducted interviews with key stakeholders. The first part of this section discusses the contextual explanations.

### **2.4.1 Extension Practices**

With Zimbabwe having undergone ten years (1999-2009) of economic contraction characterised by a runaway inflation of a world record 56m% (FAO, 2009), shrinking income levels, chronic shortages of foreign currency, basic goods and services and emigration of skilled labour to neighbouring countries; experienced Agriculture (AGRITEX), Veterinary, Tsetse and Health extension personnel involved in extension services in the district were forced to move to private sector or outside the country. The remaining experienced employees had inevitably been moved from the ward levels to district, provincial and national levels. We saw limited content on livestock and crop production written in English, which was being shared among the communities. The content had not been updated for a number of years.

### **2.4.2 Costly Conventional Extension Services**

Indications are that material and salary cost of current extension services approach is three times higher than the same cost for digital extension approach over a period of one year. (We need to do a further research on comparative costs and these are initial indications based on eleven months of these systems running in parallel with non-target project wards). The situation was compounded by the remoteness and inaccessibility of the area especially during the rain season. Motor vehicles and motor cycles were in a state of disrepair or had run out of fuel. Due to the remoteness of the area and the state of the economy, the situation remained uncorrected for a number of years.

### **2.4.3 Low Literacy Levels**

literacy level is low at 75% compared to the national average of 90.7%. Despite the low literacy level, content that was shared by local development agents was in a foreign language, which only a few benefited from.

### **2.4.4 Women-led Households**

Most households are women-led, as men have gone to work in cities and towns around the country and in the Diaspora. This meant that women had to carry out tasks that normally would be done by their husbands, tasks such as dehorning, castrating of young bullocks and immunising livestock.

### **2.4.5 Local Development Agents**

There was no coordination of extension activities, each agent working according to their organisational mandates, for example, with four development agents representing different development ministries, communities could be requested to gather four times in for days of a week. Content being shared was in print format, in brochures, booklets and posters and often in a foreign language.

The remaining part of this section discusses the findings of the interviews conducted by the evaluator. Overall the technology has been generally accepted in the wards it was introduced and this was observed from the resounding response from the farmer groups interviewed. The technology fitted well into the farmers' context and has been able to directly deal with issues that are of importance to their livelihood. This helped in heightening the popularity of the technology which has become known locally as '*kamuchina kemombe*' literally meaning a machine with knowledge of cattle management.

During the period of the project the number of people listening to a voice "lesson" increased from an initial 10 to around 100. In all it is estimated that around 11,000 people were impacted by enhanced knowledge to improve their livelihoods.

- More specifically, better animal management lessons have led to farmers realising:
- A decrease in animal mortality (the box below gives a specific example).
- Increased milk yields from the animals.
- Better management of stock feeds.
- Diversification of stock feeds to include cow peas and guar bean.

The councillor from ward 7 Ms Barbara Chiponda had 7 animals and she lost 5 due to poor disease management. Since the introduction of the lessons from the project she and her family (2 boys and 2 girls) has now successfully raised the number of her cattle stock to 5. Milk production among the cows has significantly increased. She used to milk 3 litres per day from all her animals and this has increased to 6 litres per day.

Source: Final Evaluation Report, Mika (2009)

### 3. RE-FRAMING POWER WITH RESPECT TO CONTENT AND MEDIA

Voice is acknowledged to be the main communications media of poor people. Radio has long been acknowledged (Girard, 2003) as a media that reaches grassroots groups. Until recently, however, it has been relatively expensive to start-up and has various regulatory issues to overcome. A recent review of the outlook for the use of ICTs in development by Jensen (2009) reminds us that in many developing countries obtaining broadcasting licences can be problematic. Now, podcasting offers a low-cost way of delivering audio to defined groups of people, with the added advantage of allowing recording of local knowledge by local communities themselves.

Findings have been positive and have received some publicity on the BBC World Service and BBC News Web site (BBC, 2006) and recognition in a special edition of ICTUpdate (Grimshaw and Aria, 2007).

Experience in Peru had shown that often the most effective way of getting appropriate information to poor people is via a mix of old and new technologies. If the "first mile" does not have Internet access, or indeed electricity access, FM radio, or cell phone reception, we need to re-think the channels that can be effective. That was part of the challenge that we engaged with in Zimbabwe (see section 2). First it is important to discuss the conceptual basis for using voice as a means of sharing knowledge in remote rural communities.

In the first section of this paper we raised the issue of the way in which technology can change the balance of power in a community and the example of snowmobiles in Lapland was mentioned. In the case of ICTs it is not only the technology per se which can change the power relations but also it can be the knowledge that is communicated using the technology. Danowitz et al (1995, 28) referred to ICT as being "loaded with an embedded virtual value system". Knowledge contains meaning which is dependant on context for its interpretation and understanding (Grimshaw et al., 1997). Implicit assumptions are made when that knowledge is codified and these are typically dependant on the dominant paradigm of the

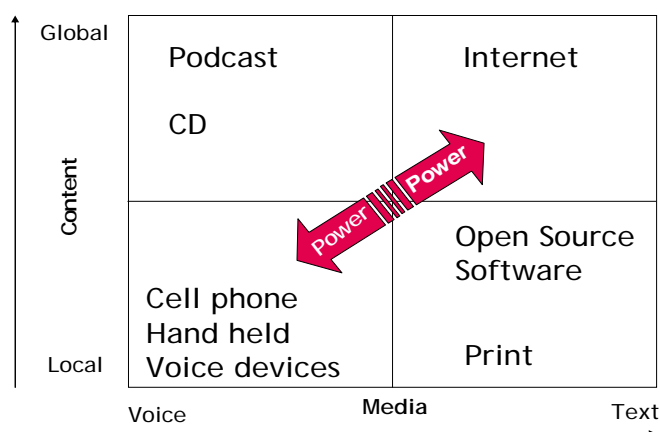


culture of the society where the knowledge originates. Thompson (2004) draws attention to a further dimension of the power balance with respect to ICTs; the way in which less developed countries become “locked-in” to the global networks of capital, production, trade and communications.

Traditional uses of ICT for development have relied heavily on text based media, often delivered via the Internet. Given that the penetration of the Internet is limited to 18% of the global population and that in developing countries there are typically relatively low rates of literacy, the playing field of power is hardly heading for equality. How will the power balance be affected if we think of voice media and local content? Figure 1 shows that for devices such as hand held voice devices which can record local content the power balance is tipped towards local people. In cases where the Internet predominates in the delivery of text based media the balance of power is away from local people.

The figure helps us to conceptualise the effect of both media type and content source as determinants of power balance. We might propose that power is more likely to be retained at the local level if voice media and local content are used. The case study has illustrated a practical project where all the stakeholders were sensitive to the potential ability of technology to change the power relations in a community. The case is an illustration of an intervention which is at the bottom left quadrant of Figure 2, using local content in local voices.

**Figure 2 Media, Content and Power Balance**



Empowering rural communities with information and knowledge can upset the social and political status quo. For example, communities become aware of their national entitlements to farming inputs such as seed, fertilisers, livestock drugs and availability of drugs at their local clinics. Local government agents become inundated with enquiries and demands for which they have to do something about. We worked with the communities to understand their development challenges and any solutions we found, including technical solutions, which resulted from these consultations, became communities’ solutions and not our own.

#### 4. DISCUSSION OF IMPLICATIONS FOR POLICY AND PRACTICE

The findings from the Zimbabwe case study and the previous interventions in Peru provide a number of implications for policy and practice which are discussed in this section. The foundation of long term sustainability of technology projects is to present technology choices to target communities and provide them with an opportunity to debate issues on the

technology. In turn, communities are capable of selecting the technology they need and thus creating favourable conditions for technology uptake, project sustainability and ownership. Infomediaries can work together and harmonise their work for the benefit of target communities, provided that partnership and trust is developed by the lead agent through participatory processes from project inception through to establishing and developing a knowledge systems. Project sustainability is created by continued use of partners' pooled resources to maintain the process.

Communities have a wealth of indigenous knowledge that remains "untapped" and unshared. This knowledge is passed on from generation to generation by word of mouth and is not documented. Involvement of communities from project inception and in content generation can lead to sharing of the indigenous knowledge and its fusion with scientific knowledge to tackle practical problems faced by communities. Community involvement in this regard has an added benefit, of them taking responsibility and a shared ownership of the content development process.

In an environment of stringent and restrictive technology regulatory frameworks, exceptions can be created and the technology can be licensed and allowed in the field. This is however possible provided the project accepts government as a partner in the process and there is sharing of the project vision and demonstrable objectives. Voice devices offer a low-cost way of broadcasting audio to defined groups of people. It must be noted that successful strategies in developing countries are likely to be those which give the greatest attention to the combination of learning strategies that are promoted. ICT applications are used to complement, rather than replace, informal learning, technological and social capacity building. Institutional technology policies must be pro-poor and a mindset change is needed on all technology stakeholders, beginning with policy makers. For example, knowledge delivery via the Internet needs to be questioned and not simply assumed as a preferred channel. The priorities of the international development community must continue to focus on poverty as a multidimensional phenomenon and to acknowledge the various contributory factors to poverty such as a lack of access to knowledge, markets, services and vulnerability to shocks.

## 5. CONCLUSION

It might be tempting to think that ICTs are a special case illustrating the tension between participative citizenship and the reinforcement of existing power hierarchies and exclusionary practices. Rather, this paper has argued that it might be an enduring quality of technology per se which can serve to disturb traditional practices and cultures in the name of "progress". As people engage in the use process of new technologies there is an important stage of learning and adaptation. The end result may be forms of knowledge associated with a particular technology that create social organisations independent of those envisaged by the technology designers.

None the less ICTs do provide new opportunities for knowledge transfer and uptake, but may also reinforce or disrupt existing power hierarchies and exclusionary practices. Some evidence from other domains of technology suggests that it might be an enduring quality of technology per se which can serve to disturb traditional practices and cultures in the name of "progress". The balance of power may be redressed via the use of local voices producing local content in a way which respects local choices.

The paper discussed the work of the "first mile" project and subsequent studies in Peru and Zimbabwe that explore the issues around the use of technologies accessible via voice, thereby providing the capability to use local language in support of local choices. We went on to show how the balance of power relates to both the choice of media and the choice

of content. We might conclude that power is more likely to be retained at the local level if voice media and local content are used.

Hand held voice devices can make a substantial contribution to improved livelihoods in remote rural areas. Further research is needed to understand the challenges of replicating this work in other geographical areas. Practical Action is currently engaging in such work in Nepal. Generally, further work is needed to help gather evidence about how the mobile phone or other devices might be used in a sustainable way. Such work needs to examine appropriate business models, including but not exclusively, micro-finance.

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