The Potential of Mobile Video As a Medium for Training Low Literate Audiences

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Abstract - Current priorities in rural development programs include training low-literate rural inhabitants in areas such as health, agriculture and entrepreneurship. Different research initiatives have been taken to explore ways in which Information and Communication Technologies (ICTs) can be used to facilitate training and information dissemination to the low-literate audiences in developing countries. In this paper, we analyse some of such initiatives and suggest from the analysis that video, when distributed to mobile phones, could be an effective means of delivering non-textual training content in rural areas. We then present our research involving the use of mobile phone videos in training low-literate community health workers in Sierra Leone and Lesotho.

Index Terms—ICT4D, training, video, software

I. INTRODUCTION

African countries like Sierra Leone and Lesotho are faced with high rates of maternal mortality and HIV/Aids prevalence. These issues persist because of limited healthcare, especially in rural areas [1], [2]. As a response to these issues, governments and NGOs invest in the training of Community Health Workers (CHWs) to provide maternal and general health care in villages. The challenge with the training is that most of the CHWs are textually illiterate and unable to use conventional means of learning, such as taking notes and reading previously learned material. Therefore, information taught by conventional teaching methods is lost and the delivery of their health services is affected.

ICTs can play a role in overcoming this literacy barrier by providing training tools that allow training information to be presented in non-textual formats to the trainees, and also support information retention [3].

II. ICTS FOR TRAINING LOW-LITERATE AUDIENCES

This section discusses some of the innovative ICT4D attempts to use non-textual information formats like voice, images, and video to disseminate training information.

A. Using Voice for Training

Voice is a useful medium for conveying content to low-literate learners, especially when such content is presented in their local languages [4]. An example of this is seen in the Healthline project [1], which uses voice to provide information to rural health workers in India. The Healthline is an automated telephone system to which health workers can call to listen to health education recordings. In Ghana, the concept of using voice to relay training information is also adopted in the talking book project [5]. The “talking book” is a handheld, battery-powered device to which experts record health and agriculture information; after which the “books” are distributed to different villages.

The results of these projects show that transmitting information in spoken language effectively irons out the literacy barrier among the trainees. However, the absence of a visual display of the concepts being taught can be a limiting factor to the clarity of the content [6].

B. Using “Featherweight” Multimedia for Training

To overcome the limitation of voice-only solutions, researchers have created devices called “featherweight” multimedia devices. These devices combine electronic audio and non-electronic visual displays like paper. The most common implementation of this is in India [6], where information is provided to patients in hospitals through a poster or a book full of images, which is accompanied by audio recorded onto a portable media player. Each section on the poster or image book is labeled with a digit, which corresponds to the name of the audio track that describes it.

C. Using Video for Training

Video can be seen as a “heavyweight” version of “featherweight” multimedia [6], with the added advantage of having moving pictures and a higher correlation between the visual display and the corresponding audio. Explored uses of video for training low-literate audiences include community video viewing clubs [7] and videos distributed to mobile phones [2].

Ramachandran et al. [2] used mobile phone videos (which were made from video clips and images woven together with voice annotation) to train and motivate health workers, which enabled the workers to take videos home as opposed to watching them from a community centre television.

Such videos embrace the advantages of voice recorded in trainees’ local languages, visual display of concepts, mobility of device, opportunity to refresh on concepts learned, and the allowance to share content with others. Based on this, we suggest that mobile videos (images, voice, and video clips combined and distributed to mobile phones) could be an effective way of delivering non-textual training information. This is more promising with mobile phones as the platform of choice because of how widely they have been adopted even into the poorest of African communities [4].

In [2], the authors report that four different applications
were used to generate the training videos (Adobe Photoshop for drawing the images, Microsoft Movie Maker and Photo Story for sequencing the pictures and adding voice-over, and a converter application for converting the videos to .mobile format). The challenge with this approach is that typical trainers would not have the skills to use these photo- and video-editing applications.

III. PROPOSED SOLUTION

Given the opportunities and challenges discussed in II, we started our research with one main question in mind: how can a tool be created, that would allow health trainers to easily and independently create mobile phone videos to assist with training low-literate community health workers? We address this question through an implementation project in Lesotho and Sierra Leone that includes the development and trial of video-creating software.

A. Software Development

The design and development stage started by holding meetings with health trainers and health workers, as well as visiting the training sites to gain understanding of the existing training processes. Outputs of these meetings and visits were artefacts collected at the sites (posters used in training, books, and other materials), as well as all the raw information and observations.

Following this, we analysed the artefacts and reflected on the observations and information collected, and then came up with sample training videos extracted from the existing training materials. We then designed an application that would be used to produce such videos and allow them to be distributed to mobile phones. The design of the application took into major consideration the fact that the target users are health trainers of low computer proficiency.

The video-creator is a Windows WPF application that uses FFmpeg to combine images, audio, and video clips into videos of .mp4 format, as shown in Figure 1 below:

Figure 1 - Overview of Content Creation Process

B. Early Testing and Field Trial

From early tests, health trainers are able to use the application to narrate lessons and create the videos, and then distribute them to the CHWs’ handsets via Bluetooth.

The software is currently being evaluated in a field trial in Lesotho and Sierra Leone, and we wish to observe how this intervention will be useful and adopted in the rural healthcare system.

IV. CONCLUSION AND FUTURE WORK

In this paper, we examined the potential that video distributed to mobile phones has in facilitating the training of low literate peoples in the developing world, and presented our study that explores this potential in the case of training community health workers in Lesotho and Sierra Leone. Future work following this current deployment would be to investigate how a similar approach can be used to deliver training in other contexts where the audience is low literate, such as in driving schools and in agricultural extension training programs.

REFERENCES


Maletsabisa Molapo received her degree in BEng Computer Systems and Networks in 2009 from the National University of Lesotho and is presently studying towards her Master of Science degree at the University of Cape Town. His research interests include the application of ICT’s in health and education, and data visualization.