

Usability Factors Affecting the Adoption of ICT-Assisted Basic Adult-Education

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ABSTRACT

Even though ICT has potential of making tremendous impact in the fight against adult illiteracy, the rate of adoption of ICT as a tool for teaching literacy has not been very encouraging. Our work on the use of ICT in adult education in South Africa brings to light a number of interesting causes of the low adoption rates. Among these are a number of usability factors. The findings presented in this paper have valuable relevance not only for those who design educational materials for adult literacy but also for those who package information for audiences with low literacy levels.

Keywords

Adult basic education, illiteracy, adoption, usability factors

INTRODUCTION

The gravity of illiteracy is higher than most of us can imagine. According to the United Nations [14] approximately 862 Million of the world population is illiterate. However, it is comforting to note that the problem is receiving attention from world authorities as high as the United Nation General Assembly. In an effort to redress the problem, the United Nation General Assembly declared 2003 to 2013 a decade for illiteracy [13]. The UN General Assembly is aware that previous literacy campaigns have not been very successful. The General Assembly's confidence in the current campaign is based on the use of ICT as a literacy tool. However, the actual role ICT will play as a literacy enabler will depend on the readiness of various stakeholders to adopt ICT as a tool for literacy.

Our research in the current usage of ICT as a literacy tool among the adult literacy education (ALE) providers in South Africa shows low levels of ICT adoption. We noted that management, historical, financial and usability factors contribute to the low levels of adoption. This paper focuses

on the usability factors. The other factors are discussed in detail elsewhere [2]

CONTEXT

Definitions

The International Adult Literacy Survey (IALS) defines literacy as “the ability to understand and employ printed information in daily activities, at home, at work and in the community” [9]. It is clear that literacy is not simply about the ability to read and write, but rather possessing multiple skills. This set of skills is culturally dependent and, therefore, the definition of literacy needs to take into account community factors [3]. The contextual aspect of literacy definition gives rise to the concept of “functional literacy”.

Use of ICT in literacy

The use of ICT in literacy is divided into three broad categories: Computers, broadcasting (television and radio) and distance education [10, 12]. It is generally agreed that Computer-Assisted Instruction enhance literacy education [16, 17]. Withrow (2002) points out that the strength of the computer as literacy enabler stems from its ability to combine different media to deliver instructions. For instance, text-to-speech software has the ability to combine text and sound. An example of the combination of text and images to help semi-illiterate readers can be found in [3]. In addition, computers facilitate active learning.

Software used in adult education include tutorials, simulations, games, problem-solving, word processing, databases, spreadsheets, digitised audio, video recordings, and animated graphics. However, most of the available adult literacy software is inappropriate and unaffordable. As a result, 10% of adult literacy programmes develop their own software [5].

Broadcasting has the capacity to reach a large number of learners at relatively low cost [4, 10]. Television

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broadcasting is an engaging activity and can act as a motivational force for learners [11, 15]. However, television is not widely used in adult literacy classrooms due to unavailability of equipment, as well as, the fact that most broadcasts are geared towards children and may not be widely accepted by adult learners [11].

Distance learning provides adult with greater choices and flexibility in their learning experience than would otherwise be possible. These factors motivate and retain students and promote faster learning [15].

Open questions

Among the main research objectives was the identification of the effective and appropriate types of ICT for use in adult education in the South African context. In this respect, the research questions were divided into two main categories:

- What factors guide different ALE stakeholders in deciding on whether or not to adopt ICT as a literacy tool?
- For those who decide to adopt ICT, what factors affect the choice of the types of technology?

As is shown in subsequent sections, a number of usability factors emerged from the findings.

RESEARCH METHODOLOGY

This research was conducted using a qualitative research approach. Qualitative research is defined as “the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain social phenomena” [8]. The decision to use a qualitative research approach stemmed from the nature of the research propositions. This approach enabled the researchers, through the analysis of people’s spoken words, to gain new understandings and make sense of situations, experiences and processes.

Semi-structured, in-depth interviews were used to gather most of the primary research data. The interviews were based on an eleven page qualitative questionnaire that consists of six distinct groupings of both open-ended and closed-ended questions. Written data sources including the literature review, company reports and memos of the various organisations interviewed formed the bulk of the secondary research data.

A total of eight interviews were conducted across a broad range of people including adult literacy promotion and ICT service provider coordinators, public and private sector literacy project managers, educators and donors. These people represent organisations that operate in four of the nine provinces, namely the Western Cape, Kwazulu Natal, Gauteng and the Limpopo.

FINDINGS

The research shows that the level of adoption of ICT as an adult literacy tool is generally low. The reasons for the low levels of adoption include financial constraints, management, lack of education on part of educators and usability limitations of the technologies. This paper focuses on the reasons that relate to usability.

Use of computers

Over half of the respondents use some form of computing in their ALE efforts. All public organisations using computers noted that computers increase learners’ enjoyment and thereby making it easier to teach them. Most public organisations that do not use computing are constrained by finances. A number of organisations indicated that they do not use computing because they “believe in the power of interactive learning, supported by an educator”. These organisations believe that computing is not capable of providing an effective, interactive learning experience.

Two organisations use MediaWorks (a software package specifically developed for adult illiteracy). These respondents believe that the software package is very effective. The inability to support multiple languages, as well as not allowing educators to create their own content were the negative sentiments expressed towards MediaWorks (the package is only available in English). One respondent uses Microsoft Office for literacy instruction. This organisation reported that computing is not effective in ALE. None of the respondents were aware of any other ALE software tools.

Use of television

It was established that the use of television can yield many benefits to ALE organisations. One organisation also pointed out that television can also be used for social development, improving communication skills and showing documentaries on world events. It was also established that there is a significant cost benefit since television content can be rebroadcast.

Only one respondent makes use of television as a teaching aid on regular basis. According to this respondent, over and above being cost effective, television makes lessons interesting and motivates learners. The rest of the organisations use television only occasionally. One of the reasons not using television is its lack of interactivity. As one organisation indicated “lack of interactivity does not allow for clarification of misunderstandings”.

Use of radio

Most organisations do not use radio. Like television, radio lacks content which is fitting for adult learners. The available Adult Basic Education and Training radio programmes are geared towards school going learners. In addition, the content is not contextual. Furthermore, radio lacks visuals and is not interactive.

IMPLICATIONS OF FINDINGS

Our findings show that the future of ICT in adult literacy education belongs to computing. However, from the usability point of view, there are a number of issues which need to be taken into account to make education technology more usable to adult learners. These factors are interactivity, the ability to support multiple languages and the ability to present information visually.

Interactivity

The importance of interactivity of teaching technology came up in a number of places. Lack of interactivity was cited as the reason for not using radio and television. Those who use computing cited interactivity as one of the motivating factors for their choice. It is also interesting to note that a couple of organisations do not use computing because they believe that computing is not capable of providing an effective, interactive learning experience. While this response shows lack of knowledge of the capabilities of computing, it also shows the importance the stakeholders place on interactivity.

Our findings with regard to the importance of interactivity agree with findings from other research on use of technology in main stream education. For instance, Barker (1994) points out that interactivity is “a necessity and fundamental mechanism for the acquisition of knowledge”. Similar sentiments are echoed by Mesher (1999).

Implication

To be effective as an educational tool, adult literacy education systems must be interactive.

Ability to support multiple languages

The ability of ICT systems to support instructions in multiple-languages is another usability factor which came up. One of the critics on MediaWorks was on its lack of ability to support multiple languages. Adults learn better when learning materials are presented in their respective languages [16]. This aspect poses enormous challenges in a country which has a host of different languages like South Africa.

Implication

Systems targeting semi-literate or illiterate users must present the information in the language of the target audience. It may be costly to translate the information into a number of languages, but it makes educational and usability sense.

Visual presentation of information

Despite being the cheapest, radio is the least preferred of the education technologies among the ALE providers. One of the main reasons for the low interest in radio is the radio's lack of visual information. In this respect, television and computer offer better alternatives. Presenting information in multiple modes increases the probability of learning [6]. To this aspect can be added the

presentation information in multiple modes i.e. text, speech and audio. Goetze and Strothotte (2001) note that interactively presenting pictures corresponding to words in a text may improve reading skills of adult learners. Compared to television and radio, computers are better equipped for this task.

Implication

Information for semi-literate and illiterate users should be presented using multiple media. Where necessary, interaction should be used to enhance the integration of the multiple media. Fortunately, availability and cost of technology no longer stands in the way of achieving such systems.

CONCLUSIONS

Previous efforts to address the problem of illiteracy have not been so successful. However, the use of ICT as a literacy tool is offering new hope to ALE providers. From our research, we can safely predict that the use radio and television as an adult literacy teaching technology will decline giving way to computing. However, for computers to be fully accepted there is need for a wide range of issues to be addressed. As has been noted in this paper, some of the issues deal with usability: We have noted that interactivity, ability to present information in multiple languages; and the ability to present the information visually are some of the usability aspects which need to be addressed.

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