Mobile Technology as Empowerment Tool for the Underserved

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Abstract

This paper describes two specific mobile technology solutions designed to educate and empower the underserved. One is to empower children to freely express their creativity and become a creative content entrepreneur through basic literacy education coupled with a storytelling program. The other is to empower the adult with basics of trade, resource management, and entrepreneurship education through a farming simulation game. These games are to help encourage local economies to grow and help the underserved fight against poverty and become self-sustainable.

Introduction

Recognizing the gap between basic human need and access, many international aid programs exist in order to promote basic education and skill development in underserved areas. However, the underserved living in abject poverty has very little or no support to become self-sustained through standalone education or skill development programs; they need to be coupled with foreseeable incentives or job leading opportunities to generate income.

Around the world, one billion people live in absolute poverty, surviving on less than $1 a day. Some 250 million children between the ages of 5 and 17 – one out of every six in the world – are working or caught up in conflict and war. In addition, children are not in school because they are orphaned, refugees, displaced, disabled or left unattended. It is estimated that half of the 104 million out-of-school children live in countries in or recovering from conflict. Also, while no precise statistics are available on how many unattended street children there are worldwide, estimates range between 150 and 100 million[1].

Basic education and skill development programs, therefore, must be a two-way street where the underserved children and adults can give and receive, and are motivated to learn to read, write, and contribute to the society while acquiring skills to be self-sustainable. If people, young or old, are helped to retain this mindset and fight sinking into the vicious cycle of poverty by drawing upon their greatest asset, which is their will to self-actualize and self-enterprise, the goal of education could become far more appealing, practical, and personal for billions of the underserved.

Therefore, in this paper, we describe two mobile learning solutions: The storytelling program is designed to promote basic literacy and creativity in children whereas the farming simulation game is designed to help the adult obtain basic, yet practical knowledge of trade, numeracy, resource management, and investment knowledge that will feed in the local economy and help the entire community thrive.

Commoditizing creativity

Human creativity is the ultimate economic resource [2]. Increasingly, the advancement of information and network technologies makes it possible for ordinary individuals to express creativity and possibly become an integral part of the global market capitalism model of knowledge or content production [3] while disrupting the traditional “linear value chain” [4]. Commoditizing creative content from several individuals across the world will serve the dual purpose of creating self-sustainability and also be instrumental in preserving local folklore which might get lost in the globalized world.

The global knowledge society today provides an open platform for any individual to create creative commodities that can trade in the global market place. Apparently, more than 50% of consumer spending is now concentrated in the creative industries in the G7 countries [5]. In fact, there is more user-generated content on the Internet than professionally-produced and corporate content [4]. The origination, adoption and retention of “novel ideas” or “creative contents” has just become the chief cause of economic growth and development [6]. Thus, the creative industries have come to recent prominence as these once “marginal” activities now have significant market value and contribution to individual wealth and GDP worldwide [7][8][9].

Digital content in creative industries

Creative industries reshape relations between old and new media and the cultural sector and place media, communications and culture as a driver, rather than a backseat passenger, in the knowledge economy [4]. Especially, new media such as digital expressions or stories, “creative commodities,” produced in various forms and styles of digital formats and shared or sold through creative industry channels are clearly disrupting and redefining relationships between asynchronous and synchronous; online and offline; public and private; local and global; and collective and networked [10]. Digital expressions or stories may come in as downloadables, mobile applications, Twitter, Facebook, RSS feeds or any creative media with or without a linkage to a revenue generating or sharing feature (e.g., Google AdSense, App stores, licensed uses, memberships, etc.).
Among many purposes and definitions, digital story or media sharing, in one aspect, enables individuals regardless of their locations, special interest groups, and communities to reclaim their identity, ingenuity or culture while exploring their artistic or entertaining creativity [11]. In another aspect, digital storytelling or media exchanging allows public and organizations to engage their communities by promoting opportunities for community members to share their narratives in a “glocal” context [10], bridging local and global communities [12].

**Storytelling entrepreneur**

The ever-growing digitally networked world creates a unique opportunity for marginalized individuals by giving them an opportunity to connect with the world through expressive content delivered as creative stories in digital form. With initial help and connection to the information super highway, all those with life stories or creative content may be encouraged to engage in the process of capitalizing their creativity as commodities [4]. With rapid proliferation of mobile devices in the developing world, mobile connectivity and handheld computing power certainly provide an environment for the underserved people (i.e., poor economically, yet rich in creativity) to participate in economies of creative content. Furthermore, the possibility of engaging in creative content economy can add tremendous value to education programs and motivate young children to realize the merit of education.

As shown in Figure 1, mobile learning solutions have been deployed in various areas of the world through a project named, Pocketschool of Stanford University and action research has been conducted to study better mobile learning design approaches for the underserved [13]. Although the project is at an early stage, it is expected that the distributed mobile learning devices in underserved communities will be used not only for basic literacy education, but also for storytelling activities and enabling young creative content entrepreneurs.

**Mobile storytelling program**

As part of Pocketschool projects, storytelling and story collecting activities have been implemented and tested in various parts of the world. In the process, several challenges have been identified and some of them included lack of literacy skills, lack of exposure to conventional stories and story structures (e.g., exposition, conflict, rising action, climax, and denouement), and lack of trained teachers or supporters.

In order to overcome the identified challenges, a Pocketschool storytelling program has been devised for children in rural villages with extreme poverty and bare resources. The mobile learning device used in this project is named “Teachermate”, which is manufactured and distributed by a non-profit organization, Innovations For Learning. A Teachermate device is a programmable open mobile learning device loaded with Linux as its operating system and GNASH (i.e., open Flash) as a presentation layer. Literally, anyone in the world can freely develop learning materials (i.e., locally more meaningful applications and games) to distribute with the device. As shown in Figure 2, children without access to formal education infrastructure can quickly learn to operate the device and engage in various learning activities. The device is equipped with a speaker and microphone so children can record and play voice or songs. The manufacturing cost of one mobile learning unit is around $50 which is currently supported by grants and corporate funding.

As shown in Figure 3, the story telling program can use images of local context and enables children to experiment with own sequences of stories. For example, a child can record a narration for each image and lay the image in a sequence that may represent a story. A child can freely record and play various combinations of sequences or share with peers, parents, or teachers if available to practice digital story telling. This simple program encourages children to practice creating creative contents with images or drawings of local context.

As shown in Figure 4, children can practice creating various stories, animations, or slides with local music. Literally, these
creative contents from developing part of the world can be uploaded to Youtube or mobile blog sites to be accessed by billions of people around the world. Considering the rate of current mobile penetration, it would not take too long for the children living in extreme poverty to start to become creative content entrepreneurs or world superstars with a series of blockbuster contents.

Entrepreneurship education for the underserved

Entrepreneurship is the engine enabling and fuelling innovation, employment generation and economic growth. Only by providing an accessible education program, while creating and cultivating an environment where entrepreneurship can prosper and where entrepreneurs can experiment new ideas and empower others, we ensure that many of the world’s issues will not go unaddressed [14]. It is the view of the authors that entrepreneurship education coupled with the most accessible, affordable, and practical learning model can become one of the key drivers of sustained social development and economic recovery.

Entrepreneurship refers to an individual’s ability to turn ideas into real action. It supports everyone in day-to-day life at home and in society; makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity [15].

With increasing accessibility to micro loan options for the underserved, educating them to take advantage of such micro loans and make a difference in their lives and communities has become an interest for a growing number of researchers. In such education program, basics of trade, numeracy, the concept of finance & investment, and entrepreneurship can help the underserved learn to self-actualize and self-enterprise. Obviously, entrepreneurship education makes tremendous sense for the underserved, but there are insurmountable challenges in devising, distributing, and supporting a sustainable and scalable entrepreneurship education model.

However, recent explosive proliferation of mobile users in developing countries creates a new hope for sustainable education and entrepreneurship projects. For example, mobile penetration in Africa has soared from just one in 50 people at the turn of the century to 28% by 2009 [16]. In Rwanda alone, Rwandatel is attracting 40,000 new 3G GSM mobile subscribers every week [17]. We note that Rwanda’s GDP per capita is $370 (2008 est.). Also, in a recent release it was reported that India crossed 109.7 million rural mobile subscribers in July 2009. [18]. The phenomenal number of rapid mobile penetration is observed everywhere in developing countries. Therefore, the current unparalleled proliferation of mobile network and handheld computing power in the hands of more than half of the world population must bring changes to every aspect of social inclusion, poverty alleviation, global economy, education, and health care.

Entrepreneurship education through mobile learning

As part of Pocketschool project partially funded by POMI (Programmable Open Mobile Internet) project [19] at Stanford University, there are a few subprojects that are on the way.

First step is to collect success stories of those who took micro-credits and launched businesses to become self-sustainable. The success stories are to be made available through mobile learning devices for those who would like to learn what micro-credits are, where to start such entrepreneurial projects, and how to get help. The second step is to distribute entrepreneurship education games designed to teach basic computation skills, investment strategies, and planning a venture with a micro-credit program.

As shown in Figure 5, User can learn about different types of crops, cost to buy, possible selling prices, growth rates, etc. and start to plan how to invest virtual money in hand to maximize the outcome and possible profit.

As shown in Figure 6, the user can plan investment and simulate the cultivation experience. As the computer clock advances, the user gets to harvest the crops and sell to maximize profits. The user can practice with different types of crops with different combinations of investment choices.

As the mobile technology and network infrastructure evolves, the mobile empowerment programs will continue to evolve as well. Later models of the system will have features to constantly update the handheld devices with the latest news from NGOs that provide valuable insights on local businesses or latest produce prices in the regional markets. The work of e-Choupal [20] in India is a good example as a source of good tips and also as a vibrant community where farmers can connect and collaborate to achieve higher farm productivity and encourage each other to venture into activities that create higher economic value and bring transformational impact on rural lives.
Conclusion

Two distinctive mobile learning programs have been discussed in this paper. Both programs are specifically designed to empower the underserved through mobile education. As we are witnessing the explosive proliferation of mobile computing power in developing countries, there are tremendous opportunities becoming available for those who are focusing on developing and disseminating education programs to the extremely underserved. As emphasized in this paper, education programs, in extremely poor communities, must present direct and clear merits of such programs. At the same time, education programs such as literacy, numeracy, and entrepreneurship must evidently present how such learning can lead to empowerment experiences for every person who chooses to engage. Moreover, there must be a support infrastructure to help those willing to further their education, participate in the global creative economy, take advantage of micro-credit programs, and make a difference in their own lives as well as their communities because everyone in this world deserves such a fair opportunity.

References