Towards e-learning for all in Sri Lanka – progress and problems in some selected Sri Lankan 21st century initiatives

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Abstract: In the 21st century Sri Lanka and many other regions in Asia have shown a rapid but heterogeneous development in the field of Information and Communications Technology (ICT). The difference in impact on urban regions and rural areas has sometimes been described as the internal digital divide. At the same time as the gap has diminished between cities in developing countries and the developed world the internal development gap has increased in many Asian countries. How can this gap be bridged? In this paper some Sri Lankan initiatives for islandwide dissemination are analyzed and discussed. The study is built on observations, recorded interviews and a literature study. In formal tertiary education we have chosen a nationwide online learning programme for a Bachelor of Information Technology (eBIT) and how the content and curriculum was developed and revised by the National e-Learning Centre (NeLC), at the University of Colombo (UCSC). Regarding primary school and informal learning we have selected the One Laptop Per Child (OLPC) initiative and the Nenasala Telecentre network. We find that these initiatives together have improved life for people in rural areas but that there still exists an internal digital and social gap that needs further bridging.

Keywords: ICT4D, Education for all, eLearning, Distance education, Telecentres, One-to-one computing, Sri Lanka

1. Introduction

“Education is the most powerful weapon which you can use to change the world” - Nelson Mandela

1.1 Education in the Sri Lankan Context

Sri Lanka is a country in the developing world with a high level of literacy and a well established policy of free education, that has poised itself to gain from the emerging global knowledge based economy. Primary and Secondary schools are free and accessible for all, but far from everyone leaves Secondary school with career opportunities. When it comes to higher education the situation is different and the actual intake to tertiary education for the year 2009 was 19,650 while the number of students left out of the university system was more than 100,000 in every yearly intake (Warnapala, 2009). During the two last decades the country’s use of information and communications technology (ICT) has increased and the infrastructure has improved in urban areas; the new digital divide is a rural-urban duality. (Gaiani et al, 2009b) On the Sri Lankan island computerization and internet facilities are mainly limited to the capital Colombo and its environs on the west coast.
and major towns like Kandy and Galle. In more sparsely populated non-urban areas, where over 75% of the population lives, the infrastructural situation is different and the digital divide a fact (Hansson et al, 2010).

The globe is seeing an explosion in the availability of information and knowledge especially through the advances in Information and Communication Technologies (ICT). The radio, the television and the Internet provide a synergy that is a potent force in disseminating knowledge much further and wider among the citizens of a country. In a less industrialized country such as Sri Lanka, which primarily relies on its human resources in its economy, the exploiting of these technological advancements to convert its populace from a largely knowledge consuming one to a knowledge producing one is of utmost importance. It has been stated that a society’s probability for development must relate not only to the education of its graduates, but also to its most peripheral citizens. Both poverty and conflict can only be tackled effectively through the education of the masses. To quote two voices on these two aspects of society, Marian Wright Edelman says, “Education is for improving the lives of others and for leaving your community and world better than you found it”, while Maria Montessori has said, “Establishing lasting peace is the work of education; all politics can do is keep us out of war”. Post war Sri Lanka is in need of wide-scale education of all its citizens right up to the periphery in order to raise itself from the downward spirals of poverty and conflict.

1.2 Aim
The aim of this study is to analyze and discuss the progress of some selected technology enhanced education initiatives and their potential to support the idea of education for all in Sri Lanka.

2  Methodology
The study is built on observations, recorded interviews and a literature study.

2.1 Observations
In the observations of the UCSC based activities we have been part of the process and friendly with most of the informants. But in the research part we have always tried to be as neutral as possible with the approach of being “outside observers” (Walsham 1995). Authors have participated in the development of the eBIT and FIT programmes as well as in the construction of the National eLearning Centre (NeLC).

2.2 Semi-structured Interviews
In a broad definition, an interview could be seen as a purposeful discussion between two or more people (Kahn and Cannell, 1957). There are different kinds of interviews that can help you to gather and select relevant data for your specific research topics. In the range from strictly formalized interviews using standardized questionnaires to more informal and unstructured conversations the interviews in this article should be classified as semi-structured in-depth interviews. (Scribd Inc, 2010).

2.3 Recorded Interviews in MP3-format
Within academic research there exists a tradition of in-depth interviews as a tool for gathering data on people’s opinion and interpretation of more abstract and complex
phenomena. Another tradition is to capture the answers by taking notes during the conversations.

In modern journalism interviews have frequently been recorded for many years, but the academic default standard is still mainly written text and shorthand. Modern digital audio technology opens up new possibilities of data collection, storage analysis and reuse (Mozelius, and Hansson, 2009). All interviews in this article can be found and downloaded at http://people.dsv.su.se/~mozelius/thesis/interviews/. The names of the files are the same as they are given in the separate section for “Recorded interviews in MP3-format” at the end of this article. We have chosen the mp3-format since it is an open standard that can be played on most of the existing computer platforms.

2.4 Literature study
The history of ICT and e-learning in Sri Lanka is relatively young phenomenon and research papers and literature have been completed with information from the web and from Sri Lankan newspapers.

3 Some Selected Sri Lankan e-learning Initiatives
Many of the technology enhanced education initiatives below are designed, started and executed from the University of Colombo, School of Computing. Infrastructure and Internet access quality are better in the capital of Sri Lanka than in the island’s rural areas. Learning activities that could be run from a computer in Colombo might not work in the Sri Lankan countryside. In many people’s opinion the two most important Sri Lankan universities in the field of IT and Computer science have been, and still are, the University of Colombo and the University of Moratuwa. For many years the University of Moratuwa has specialized in hardware, meanwhile the University of Colombo, School of Computing (UCSC) has had a focus on software engineering and systems development (MP3-Jayaweera, 2011).

But there have been a lot of other actors involved as well. We have here, amongst a lot of others, selected the eSri Lanka, the One Lap Top Per Child (OLPC) and the Distance Education Modernisation Project (DEMP) initiatives.

3.1 The BIT Program – A Bachelor of Information Technology
At the end of the 20th century there was an increasing demand for IT graduates in Sri Lankan industry and still the traditional university system could not increase the intake for IT-programmes. To address this, a new tailor made Bachelor of Information Technology (BIT) was designed and started at the University of Colombo in 2000 (Wikramanayake, G. N. et al ,2007). The new eBIT programme was constructed as an external programme without any teaching and learning sessions at the University in Colombo. UCSC designed the syllabi and were responsible for the curriculum and content, but for lectures and teaching sessions the students had to visit facilitating places and private teaching institutes (MP3-Nishakumari, 2011).

From the beginning of BIT, the use of ICT to communicate the programme was given special consideration allowing students to practice the use of ICT. All information
about the programme such as registration, curriculum, examination, etc. has been published on http://www.bit.lk. Initially it was an information website but later it was transformed to a student portal, which allows one to register for the program as well as to retrieve examination results as well. The BIT programme, which includes some foreign students as well, has now in the new updated eBIT version become one of the most popular IT degrees in Sri Lanka.

3.2 eBIT – The Online Version of BIT
The older BIT curriculum was revised to develop online courses considering user-centric collaborative learning pedagogy and constructive alignment. A new Virtual Learning Environment (VLE) based on Moodle LMS was established and customized. This new and localized e-Learning framework was introduced as the “Vidupiyasa” (Interface for Learning and Knowledge). Interactive online learning materials were developed according to international e-Learning standards SCORM covering 28 courses of six semesters in the BIT degree.

Video lectures were developed for selected courses and distributed using a local TV channel, CDs and online TV called Vidudahara. In order to enhance the soft skills and the background knowledge of students, Vidudahara was used to webcast video recordings in all three languages at http://www.ucsc.tv. Assessment played an important role in the learning and teaching. Hence, an e-assessment system for formative and summative tests was developed to provide on demand testing. e-BIT Virtual learning environment itself contains more than 7000 MCQ questions to assist the learning.

The new eBIT programme was supposed to increase the pass rate of the BIT degree by providing online learning materials and assessment. After one year, the pass rate of first year (Diploma of IT) courses was thrice as much as the previous rate. At the same time many students obtained good grades in their courses due to online e-Learning content and e-assessments.

3.3 FIT – Foundations of Information Technology
Despite all the improvements in the eBIT programme the step from secondary school to the more advanced eBIT courses was difficult for many students. Lack of skills in English and Mathematics was a problem that needed to be addressed. The FIT programme was for that reason designed to be a bridging programme for students that have had problems in passing the ordinary A-level exam. Feedback on the FIT programme has been positive and these courses where students can learn basic Computer science, Mathematics and English for IT are also of interest for a broader target group than presumptive eBIT students. But the FIT programme has not been promoted since it would probably attract a lot of students and there are for the moment no persons employed to handle the examination (MP3-Wikramanayake, 2011).

3.4 NeLC – A National eLearning Centre
An UCSC based e-learning centre was started in 2002, to support the transformation of the current BIT material into interactive e-learning content and facilitate the necessary curriculum development. At that time USCS collaborated with Swedish experts and got Japanese support from JAIKA at the same time as they had a dialogue with Australian universities (MP3-Wikramanayake, 2011).
The e-Learning Centre of UCSC was established to address the proper integration of ICT in the education process in Sri Lanka. At the beginning, there was no expertise in e-Learning at UCSC and the Swedish aid organization Sida provided assistance through a planning grant. A LMS was established to provide formative assessments without e-learning content, and training programmes were conducted to improve the knowledge of e-Learning practices. These activities initiated research and development (R&D) interest about e-Learning among faculty members. Later this has been extended to establish the virtual campus of UCSC called “Vidupiyasa” to deliver ICT education through an online environment/Internet (http://vle.bit.lk). Vidupiyasa is a framework which integrates various learning and assessment environments with the idea of serving as a centre for e-Learning all over the Sri Lankan island.

3.5 DEMP - The Distance Education Modernisation Project

In 2003 the Open University of Sri Lanka (OUSL) got funding from the Asian Development Bank for modernizing their distance education. OUSL has during the last 30 years experimented with different forms of distance education (OUSL, 2011). The project was a collaboration with the Sri Lankan Ministry of Higher Education and part of the project was to develop infrastructure to support access to postsecondary education in Sri Lanka. Participation of women in higher education has increased during the last few decades. Women’s representation in undergraduate enrolment went from 47.7 % in 1978 to 54.4 % in 2006 and the introduction of online courses at the OUSL seems to match the female need for flexibility. (Gunawardena and Karunanayake, 2008)

The DEMP project later became a white elephant and out of the planned 100 e-learning centres with fast Internet access only 26 were completed. (MP3-Nandasara, 2011) With new funding from the Asian Development Bank the 26 DEMP Access centres were restarted and renamed as NODE centres. According to the the Ministry of Higher Education the NODE initiative should be the new National Online Distance Education Service of Sri Lanka with a target of 150 centres strategically spread all over the island (NODE, 2011).

3.6 eSri Lanka and the Nenasala Telecentre Network

Several ICT initiatives have been launched by the Information and Communication Technology Agency of Sri Lanka (ICTA) under the umbrella of eSri Lanka. The main objectives of the eSri Lanka initiative is to "develop the economy of Sri Lanka, reduce poverty and improve the quality of life". (eSri Lanka, 2011) For this paper where we are analyzing projects that supports an islandwide dissemination of e-learning we have chosen the eSri Lanka initiated Nenasala telecentre network (Nenasala, 2011).

Since the very beginning Sri Lankan telecentres have had a wide variety of models and organizations. (MP3-Wijayawardhana, 2008) Nenasala is a word of Sinhala origin that means a center for knowledge and Nenasala has been the given brand name for about 600 community driven Telecentres in rural Sri Lanka. Their overall aim is to bridge the internal digital divide and to promote local commerce and culture. The national network of telecentres was developed by the Sri Lankan Information and Communications Technology Agency (ICTA) with the aim of starting and establishing 1000 telecentres in rural regions. A Nenasala telecentre could be
equipped in different ways but normally with 2-4 computers and a printer. Many
telecentres, but not all, have Internet access by satelite (Meegammana et al, 2010). During the first
year of establishment the telecentres normally get their Internet bills paid by ICTA, during the second
year with a 50% support and then the subsidization is phased out during the next two years (MP3-KoslandaTelecentre, 2011). A
Nenasala can be successful without Internet access but if the Internet connection is
cut off the rate of visitors will go down and in some rural areas it is hard to find a way
to get Internet access to affordable prices (MP3-Haldemulla_Manager, 2011).

Common services in the telecentres are training in basic computer science and how
to use Office packages. It is also common to have courses on digital design and
image handling. When telecentres are able to provide these kind of services in
isolated rural areas it is appreciated (MP3-Haldemulla_ALevelGirlStudent, 2011).

3.7 One-to-one Computing
The term one-to-one computing has lately been frequently used and the main idea
of the concept is to equip every student in primary schools with a personal computer.
In many countries this has been combined with giving the students Internet access to
be able to search for information and to share content. Three examples of low-cost
laptop brands produced for one-to-one computing are *Intel ClassMate*, *Asus Eee PC*
and the One Laptop Per Child *(OLPC) XO computer*. In Sri Lanka there are several
implementations of One-to-one computing. In the so called “eVillages” the Intel
ClassMate computers are provided in combination with the use of Internet in the
Primary school curricula. The computers have been distributed with digital learning
objects and Intel has given support for computer maintenance. (MP3-eVillage-
Interview, 2011)

In the Sri Lankan One Laptop Per Child (OLPC) initiative the focus is not on Internet
access or connecting the XO computers to a network. The Sri Lankan Ministry of
Education has not followed the recommendations from the OLPC foundation and has
chosen their own model where emphasis is on content development in the islands
local languages. (MP3-Gunadasa, 2011) Thirteen schools have been selected for
the first pilot that will be evaluated during 2011. The schools are located all over the
island with students from various ethnic groups but all schools are in poor rural areas.

4. Analysis and Discussions
The transformation of the BIT programme to the technology enhanced eBIt has in
many ways contributed to an improvement in the level of Sri Lankan e-learning and
pass rates in distance education have certainly increased. From a pass rate around
2% in the early batches, some courses have increased the number of students
passing to above 70%. In striving to remove the barriers to higher education the FIT
programme must be seen as an amendment and the UCSC national e-learning
centre has developed a lot of high quality content during the last decade. From
several aspects the overall ICT situation has improved in Colombo and other urban
areas but to bridge the internal digital divide the analyzed initiatives are a good start
but not the solution. More must be done if Sri Lanka should live up to the ambition of
“Education for all”.
In the Northern region Jaffna has its own university, OLPC schools and telecentres, but the infrastructure and ICT facilities are still suffering from the 30 years of Civil war. Not more than 50% of the 600 Nenasalas could be classified as in order and sustainable, but this is far better than the telecentre situation in many other countries in the developing world.

The first year of one-to-one computing and XO computers in primary schools has not been evaluated and the official assessment from the World Bank has been delayed. But according to teachers in the primary schools there is a positive impact when it comes to both formal and informal learning. There have been problems with hardware as well as software support but the common opinion among teachers, students and parents seems to be that the pilot should be extended and made permanent.

5. Conclusions
After the ending of the 30 year long civil war, the Sri Lankan island has entered a new phase with a lot of interesting possibilities. The economy is growing fast and in 2010 the Colombo bourse was Asia's second-best performing market. Many sectors in industry, and not at least the IT-sector, have a huge demand for educated manpower. The traditional approach of providing education doesn’t accord to the current demand and it does not increase social integration. ICT must be integrated in primary and secondary education to minimize the digital gap. The OLPC initiative is a good example in this direction. However, the island's schoolnet (www.schoolnet.lk) could be more productive and promote and support ICT in Sri Lankan education.

The described and analyzed initiatives together have improved the life for people in rural areas but if everyone should be included there are more actions to be taken. Specially, there should be good coordination between different initiatives to achieve overall objectives. Indirectly, some initiatives could benefit or complement each other but with a better overall coordination and linking mechanism, there would probably be more benefits than those we have observed in our analysis. An island-wide ICT support for lifelong learning would also be a preventive peace-keeping project in a country where different population groups need to strive in the same direction to improve future development.

References:


DEMP (2011). Distance Education Modernisation Project (retrieved 28/04/2011) http://www.nodes.lk/DEMP.html


Gaiani, S, Hansson, H, Meegammana, N, Mozelius, P (2009a). “Critical issues for e-learning telecentres in Sri Lanka and India.” M-2009. 23rd ICDE World Conference on Open Learning and Distance Education including the 2009,


Recorded interviews in MP3-format stored at: http://people.dsv.su.se/~mozelius/thesis/interviews/

Teachers’ experiences from one year of one-to-one computing
Blackwood OLPCSchool TeacherTeam.mp3 (Feb 2011)
(Teachers in a One Lap Top Per Child Primary School)

The eVillage Model for one-to-one computing
eVillage Interview.mp3 (Mar 2011)
(Manager and teacher in a one-to-one computing eVillage )

The Sri Lankan way of implementing One Laptop Per Child
Gunadasa, N._SriLankanOLPC.mp3 (Mar 2011)
(Head of the Sri Lankan OLPC initiative)

Running a Nenasala Telecenter in a rural area
Haldemulla Telecentre Manager.mp3 (Feb 2011)
(Manager and teacher at the Haldemmulla Nenasala telecentre)

The user perspective of a Nenasala Telecentre
Haldemulla Telecentre AlevelGirlStudent.mp3 (Feb 2011)
(Course participant at the Haldemmulla Nenasala telecentre)

Differently-abled persons running a Nenasala Telecentre
Koslanda Telecentre Owner ManagerAndTeacher.mp3 (Feb 2011)
(Owner manager and teachers at the Koslanda Nenasala telecentre)

Sri Lankan universities and the use of mobile technology
Jayaweera, P._OnMobileTechnologyAndSriLankanUniversities.mp3 (Feb 2011)
(Lecturer and researcher at the University of Sri Jayawardenapura)

On the DEMP and NODE initiatives
Nandasara, S.T. NODECentresAndEnglishForAll.mp3 (Feb 2011)
(Director of the NODE project)

Transforming the BIT programme to eBIT
Nishakumari, K.M.G.B. eBITandCurriculumDevelopment.mp3 (Feb 2011)
(Instructional Designer at the UCSC eLearning Centre)

Wikramanayake, G.N. TheHistoryAndFutureofUCSCAndeBIT.mp3 (Feb 2011)
(Director of the University of Colombo School of Computing)

Wijayawardhana, H._TheTelecentreHistory.mp3 (Aug 2008)
(Telecentre Coordinator at the Information and Communication Agency/ICTA)