Sustainable Quality Improvement of ICT Education in Secondary School curriculum of Sri Lanka

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Abstract

At present, the development of a country is mainly geared to knowledge based economies. Therefore quick access to and the right use of reliable information is fundamental. Information and Communication Technology (ICT) plays a vital role in this regard. This brings a need for an ICT literate workforce and integration of ICT into the school curriculum.

The Ministry of Education has taken several steps to increase the quality of ICT education focused on teaching other subjects using ICT, the use of ICT in school administration, and the integration of ICT subjects into the school curriculum. Therefore ICT has been integrated into the GCE (O/L) and GCE (A/L) School Curricula.

This paper presents the findings of an investigation carried out to understand the present status of current ICT education in Sri Lanka. Through the weaknesses and strengths observed, it proposes a reasonable model to address these issues.

1.0 Introduction

ICT was initiated in the Sri Lankan schools in 1982, and in this sense, Sri Lanka was one of the pioneering countries to introduce computer education to the school system. Although, initially a slow growth was observed, a significant quantitative improvement

emerged later. For example, only less than ten (10) schools equipped with computers in 1982 have gone up to 3260 by 2008 (SEMP, 2008). However compared to computer education at school level in some developing countries, we still lag behind.

A massive effort has been taken by the government to increase the quality of ICT education through a large involvement of public money and some loan grants such as GEP II, SEMP I, SEMP II, and TEDP. It was important to investigate whether the impact of this investment was worthwhile.

The aim of providing the ICT facilities to Sri Lankan students is three fold.

1. To teach ICT as a subject targeting the students awareness and familiarity with ICT
2. To learn other subjects with ICT
3. To make school administration efficient

This paper address first objective, i.e. teaching ICT that promotes the learning of ICT.

Some essential factors that influence the quality of ICT education are resource selection and allocation, infrastructure development, and credibility of the ICT education system (National Education Commission, 2007), therefore, they must be improved in an efficient and effective way. By 2012, it is envisaged that the government will fulfill resources, its infrastructure facilities and improve relevant skills among teachers to enrich ICT education in our school system. The Government is implementing a rapid action plan for its success. The Ministry of Education has initiated several projects and programs to enhance ICT education in Sri Lankan schools.

The reasons why we are now lagging behind other countries through we were one of the pioneering countries to introduce ICT education at school system, and the possible remedies to make ourselves compatible with other countries, have not yet been investigated.

2.0 Background to the research

Most developing countries, including Sri Lanka, are constantly struggling with implementing measures that would increase the quality of living as they are presently experiencing poor economic performance, poor productivity, and inefficient governance. On the other hand, e-governance (re-engineering government) does and could play a vital role in enhancing the quality of life of the nation. ICT is an effective ingredient in this process and that implies the need to educating the citizens with ICT education through the general education system.

It has been reported that there is an ever widening gap in the urban-rural areas with respect to economic standards in Sri Lanka. Successive governments have implemented many rural development projects such as road, telecommunication, electricity, irrigation education etc. with little success.

It is believed that the set back in IT literacy amongst the rural people is a vital factor that contributes to the socio-economic development of a rural society. Most people believe this gap (Liyanage, 2004) can be eliminated by introducing an ICT culture to the Sri Lanka educational system as an initial driving force.

The quality of ICT education in schools depends on several factors such as well defined and planned curriculum, human resources such as qualified teachers, teacher trainers and professionals, and infrastructure facilities such as electricity, communication facilities and computer laboratories etc.

At present 76% of our schools system have electricity, 26% of them have land phones. Internet and E-mail facilities are available in a very small proportion of schools and rate at 6.4% and 4.1% respectively (Ministry of Education, 2006 (b))
From an administrative point of view, the government school system is mainly divided into two categories. They are National Schools under Line Ministry and other schools under Provincial Councils.

Further considering streams and maximum grades available in the school, definition of the school types are as follows:-

1 AB - Schools having Advanced Level Science Stream classes

1 C - Schools having Advanced Level Arts or Commerce stream(s)

Type 2 - School having classes up to grade 11

Type 3 - School having classes Up to grade 8

Due to the above categorization, disparities may occur in different ways which are based on controlling authorities, teacher allocation methods, teacher training methods, and resource allocation etc.

To get an overall clear picture about the Sri Lankan school system, the following information is very useful and is based on a survey done by the Ministry of Education (ibid) which gives a functional grade wise comparison of basic information.

Table 1: ***Category wise School population***

	Schools	Students	Teachers	Student/Teacher Ratio
1 AB	659	1191030	54111	22
1C	1854	1250235	63962	20
Type 2	4225	1057071	67523	16
Type 3	2976	338214	19312	18
Total	9714	3836550	204908	19

This classification is based on the level of resources available. Therefore, the classification itself indicates that there is a gap between different school types. This classification is further divided into Districts (See Appendix 1). Since the infrastructure facilities differ from one district to another, even in the same school type there may be same differences.

3.0 History of the ICT Education in Sri Lankan Schools

In Sri Lanka, Computer education at school level started in 1982. Some schools were given primitive type computers (less than 10 numbers) (UNESCO). As this initiative did not provide a direction that would create a significant impact, Computer Resource

Centers (CRCs) were introduced with the assistance of the Asian Development Bank (ADB). This network of CRCs has now grown to 73 on an island-wide basic. These CRCs provide computer literacy (Microsoft office package) and basic professional IT skills (introduction to programming) to students after their G.C.E (O/L) & G.C.E (A/L). Later the Ministry of Education introduced marginal IT involvement for business studies syllabus's for junior secondary level.

General Information Technology (GIT) was implemented as a pilot program in 2002 (Ministry of Education, 1999, Ministry of Education, 2004 Circular No. HRD/PPR/2002/9), and was introduced as a subject to the school system in 2004. GIT is taught only at Grade 12 (i.e. 1st year GCE (A/L) to students following any stream of studies at two (02) periods per week. Although the medium of instruction is English, where necessary, Sinhala and Tamil was use for the purpose of explanation. GIT was not considered as a subject for university admissions. The first national examination was conducted in august 2005. In subsequent years the examination was delayed by a few months due to administrative problems.

In Sri Lanka, (Ministry of Education, 1999), ICT was included as a technical subject area for Grade 10 and Grade 11 based on the Ministry of Education Circular No. 99/45 in 2006. This subject was provided for four (4) periods per week in the same manner as have periods provided for a Technical Subject at present in the secondary school curriculum. The first national examination was conducted in December 2007.

4.0 Facilities Provided to Improve ICT Education in Sri Lankan Schools

4.1 The General Education Project (GEP) -2)

In 2003-2004, the Ministry of Education initiated a project called GEP-2. The main objective of this project was to improve the quality of general and ICT education in Sri Lankan schools. For this project the following resource and services were supplied.

Four hundred (400) computer labs were distributed among eight (8) provinces. The computer quota for one province was fifty (50) labs so that each lab contained ten (10) computers.

A teacher training work shop was conducted by the National Institute of Education for a period of Fourteen (14) days for which training, eight (8) teachers were selected from a school. The main aim of this workshop was to teach seven general subjects (mathematics, science English etc) using ICT. Of these eight (8) teachers, one teacher was selected to teach ICT as a subject in the respective school. The appropriate software and tools were developed & distributed and also steps were taken to maintain and sustain the teaching of other subjects using ICT by National Institute of Education. For this program, schools and teacher selection was done by the authorities from provincial education departments and the above was restricted to 1AB and 1C schools.

4.2 The Secondary Education Modernization Project 1 (SEMP 1)

This project was started in 2000 and ended in 2006. The objective of the project was to improve the quality of secondary schools to raise up to one million secondary students will benefit from this programme to modernize Sri Lanka's secondary education, the key to promoting economic and social development and reducing disparities. This project funded by ADB, will improve access for an additional 5000 poor students annually by upgrading 100 existing schools. Modern teaching facilities such as multimedia rooms were provided in all the secondary schools to enable the use of television, VCRs and audiocassettes as learning materials in key subjects.

The modernization of 2,300 secondary schools island-wide focused on improving quality, access, efficiency and management. The major focus of the project was to develop computer literacy to narrow down the digital divide, thus enabling rural youth to successfully cater to the future job market by gaining computer literacy and a sound technical knowledge.

The project improved management and supervision throughout the national, provincial, and local education institutions so that teachers and principals would have a greater control over classroom learning as it affected school efficiency.

Table 2 - Targets & Achievements of the ICT Education Component of the SEMP1 Project

ICT Activity	*Target*	*Achievements*
Establishment of CLC*	*1000*	*1006*
School Net – Online Connection	*1200*	*1200*
Establishment of Multimedia Centers	*2300*	*2168*
Establishment of CRC and CDL	*30*	*30*
Teacher Training Program on CAL (18 Days Training Program)	*27000*	*23960*
Trained Teachers on E-Citizen Program**	*1398*	*1398*
Trained Teachers on Multimedia Centers	*9940*	*9940*

*Computer Laboratories equipped with computers with relevant facilities which also included payment of electricity bills for the first two years.

** Completed a 7-day computer training course on E-Citizenship to motivate the principals in schools

To popularize and encourage the student/staff to ICT education, the Ministry of Education has been conducting ICT Competitions called provincial educational software completions since 2005.

4.3 Secondary Education Modernization Project 2 (SEMP 2)

This project started in 2004 and is proposed to end in 2009. The Project will help establish a secondary education system that is equitable and responsive to labor market requirements.

It will increase equity of access to quality secondary education by upgrading approximately 1,200 target schools to an acceptable quality standard. It also will support the government's strategy to modernize the secondary school curriculum and teaching-learning methodologies by equipping some schools with science laboratories, computer facilities, and multimedia units. School personnel are to be trained to manage and sustain

these facilities and improve teaching-learning activities through means of zonal trainers/facilitators. Schools will be required to submit a comprehensive School development plan (SDP) before receiving any support. School-Based Management (SBM) will be enhanced through the provision of small-scale school development grants. Incentive programs to attract teachers to work in rural areas will be carried out. Special attention will be given to support Tamil teachers. Stipends will be provided to poor students qualified to study Advanced Level science or commerce in a school in the vicinity. The capacity of provincial, zonal and divisional education officials will be developed through training and consulting services. The project will support implementation of government's policies and reforms in education such as the decentralization of education and introduction of SBM, and integration of school-based assessment in the national examination. The project will also contribute to social equity and building of social cohesion by minimizing disparities across regions and ethnic groups, and by promoting a comprehensive curriculum content and teaching methodologies.

The Secondary Education Modernization Project 2 has two major objectives:

- To support the government's strategy to improve the quality, equity and management efficiency of secondary education and make it more responsive to labor market requirements, and
- To contribute to the government's long term policy on peace building by increasing equity of access to quality education and promoting education for social cohesion.

The project targets approximately one thousand two hundred 1AB and 1C schools. It is proposed that the physical infrastructure and facilities of 1AB and 1C schools that are considered to be below accepted standards are developed; therefore, minor civil work will be undertaken in selected schools ,which include construction of computer learning rooms, libraries, activity rooms, science laboratories and more.

Table 3: ***Target and achievement of the SEMP2 activities in connection with ICT Education (by end of April, 2008)***

ICT Activity	Target	Achievements (Already in Operation)
Establishment of CLC at Balance Eligible Senior Secondary Schools	358	358
Contraction of Multimedia	105	95% Completed
ICT Training Activities	35000	35000***

*** The above 35000 persons were involved in the following activities. For the ICT awareness program, 92 zonal facilitators 16 master trainers trained for facilitation, 17000 international computer driving license (ICDL) scholarships were granted for teachers. 490 officials were provided with e-learning programs. 400 ICT G.C.E O/L teachers were trained and 700 ICT short courses scholarships were provided to teachers.

4.4 Present Official Networking Facilities in Sri Lankan Schools

The School_ Net of Sri Lanka

SEMP has taken the initiative to establish a Wide-Area Network (WAN) connecting most of the Senior Secondary Schools and other related organizations via School- Net which is the platform for the stakeholders in the school education sector for Schools, Computer Resource Centers (CRC), Provincial ICT Centers, National Colleges of Education (NCOE), Ministry of Education, National Institute of Education, Project Management Offices of SEMP etc..

The Ministry of Education has empowered School Net to host a web site called **schoolnet.lk** to improve the quality and accessibility of online subjects such as mathematics, science and etc it has an interactive educational content for Sri Lankan students and teachers thereby promoting School Net (SLT-2007), a venture by the Ministry of Education in an on line educational system that seeks to promote efficiency and academic achievement in public schools It is beginning to revolutionize the way

students learn, teachers teach and school administrators, operators and parents get involved in the whole education process. To achieve this, SLT provides an Internet Protocol – Virtual Private Network (IP-VPN) based network and it includes multiple products such as voice, video, broadband internet, network services and hosting services.

Under this project, schools are connected island-wide to school net VPN, using different access speeds based on current requirements. The target is to link 5000 schools by year 2010. To date 1200 schools are connected to schoolNet. The project allows access to school Net communities, promotes on-line access to educational software and enhances teaching and learning. They improvised development in audio, video and computer assisted programs along with the computer mediated communications thereby offering many possibilities for teachers to convert activities around interactive learning, watching videos, marking on-line assignments and communicating through real time.

4.5 Other ICT facilities from the Ministry of Education

Special cabinet approval was given in early 2008, and forty (40) million rupees was allocated from the consolidated fund to give ICT facilities. Through this grant, the Ministry of Education provided computer labs (10 Computers or 20 Computers) to the national schools to maintain the basic ratio of 75:1 par student: computer. Computers and other facilities were distributed considering the real need and present available resources of the school. Continuous teacher training activities were included in this task and are still progress. The Western province, Colombo district provincial educational office is willing to provide Computer labs to provincial schools when considering their real need and present available resources of the school.

In addition to the above, other provisional councils and other organizations (Ngo's, Microsoft and more) contributed more help to enhance the ICT education in the school system.

5.0 Introduction to a Quality Education

Quality education supports a right-based approach to all educational activities,

- Education is a human right,
- Every citizen has the right to a quality education
- A Quality Education for all is based on four pillars - learning to know, learning to do, learning to do together and with others, and learning to be

In this view, the learners are considered as an individual, a family member, a community member, and a global citizen and hence educated to create individual competency in all four roles.

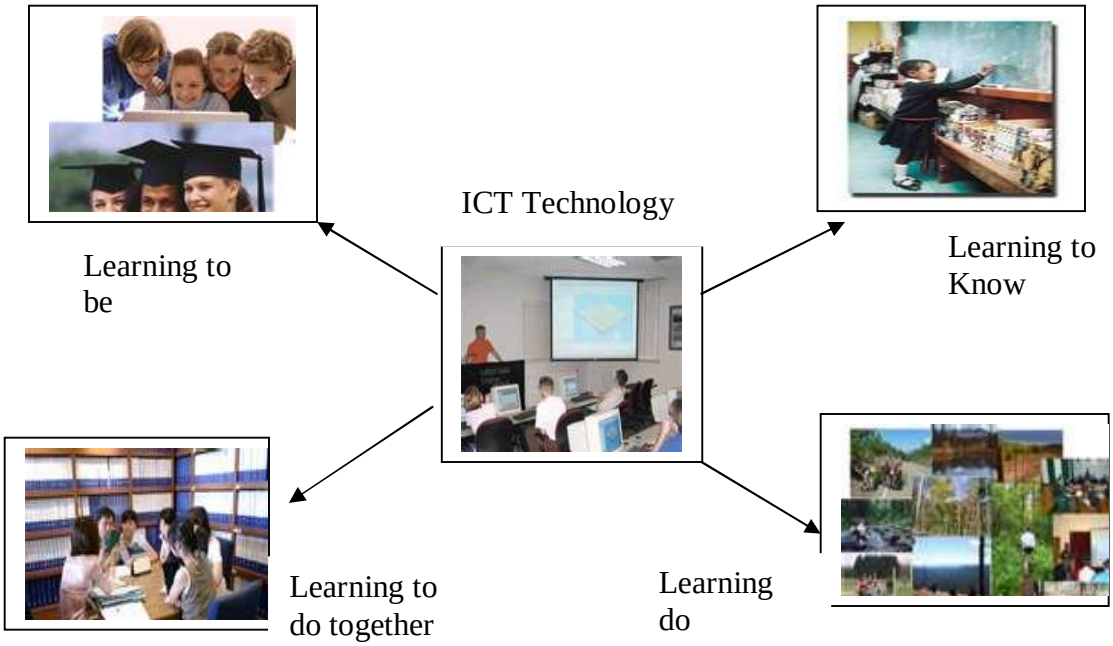
5.1 How to apply the four pillar approach to ICT education

From time to time, the government of Sri Lanka adopted different policies to remove this inequality through various methods. (Liyanage, 2004) Liyanage says that using ICT education & using ICT based devices will remove unequal education distribution and the report also included "it is very clear that a major part of the education technology is based upon the development of ICT". Further this report says that education information is manipulated and exchanged to create and use knowledge. As such, there isn't any modern technology comparable to ICT that has a tremendous implication on education. In fact ICT has enabled undreamed of possibilities for interaction between students, schools, teachers and parents over any distance. As a result ICT has become one of the most attractive and potential technologies that could be used to transform education today. It implies that a major parameter of quality education is considered as ICT education.

Therefore a quality right based education approach that should be applied to the ICT education is follows.

- ICT Education becomes a human right and
- Every citizen has the right to a quality ICT education

- A Quality ICT Education for all is based on four pillars - learning to know, learning to do, learning to do together and with others, and learning to be



5.2 How to justify the validity of the above to the Quality ICT education model

Learning to know- now-a -days, the field of computer & ICT education is rapidly improving in Sri Lanka and globally. It is already identified as a high strength tool and bridge to remove the digital divide from the world. In the modern world, ICT is essential to create a complete person. Now ICT is spread over all the discipline areas locally and globally. In the modern society ICT is essential to survive in a modern society therefore every citizen has a right, learning to know in ICT filed.

Learning to do – ICT is a compulsory tool in school education, higher education, office, trade, industrial and agricultural and other areas. A number of programs were launched, a one such more ambitious titled "vidatha & nanasala" and more over to realize the program and to remove the social divide between the rich and poor based on the concept of "learning to do", ICT is essential for day-to-day activities that would be initiated at the school education.

Learning to do together with others- In ancient people did all works as a group work, as an example “atthama” in cultivation field. According to education techniques, group work is important. For the ICT professional field namely software development, system development and other work processes are completely group oriented. Therefore these types of professional activities directly add to ICT school education and it will help to perform other related activities in the human life, ICT will be the most powerful tool to gather people to do work as a group or a team.

Learning to be – 330,328 students were entered to the Grade 1 [Ministry of Education, 2006, *School Censes]* and nearly 20,000 students entered university education from the 2007 A/L examination. University lecturers and professors were highly involved in connecting results by setting and marking the GCE (A/L) papers and their target was pre-preparation of students for university education. The Target of the GCE (O/L) was bridge to the GCE (A/L) Examination. It is implies that the entire secondary and higher level of education was focused to the university education. Therefore present education systems were encouraged only 6.05% achieved their dream. The present education system did not cater to satisfy the above pillar for 93.95% of students. After implementation of a proper ICT education, the above percentage can be minimized. ICT and all other areas are to be blended with modern ICT technology. The concept of “learning to be” will apply for the ICT education as well as in other areas

By considering the above facts for quality education, ICT education is a key ingredient. Therefore it should be included in a School education system.

5.3 Critical issues in ICT education

ICT education is a human right. Therefore all students have a right to learn ICT from the school system. 6738 schools want ICT facilities. Most schools have a computer lab with at least 10 computers. The government will plan to connect and supply internet facilities to 5000 schools by 2010. At present 1200 schools were connected to the school net and they have internet and e-mail facilities. The government should plan to connect all

schools by at least 2010 and at the same time schools should be ready to accept the facilities.

The Ministry of Education and other organization will provide continually human and physical resources to the school system to suit the real requirements of ICT education. They should also arrange methodology to maintain hardware and software in the school system as an aim of sustainability.

Most students and staff are more familiar with closed source software applications, because the software fees for purchasing and renewal license may be a big financial constraint to the system. Students and teachers should encourage the used open source software as a solution for this financial constraint and preventing security/virus issues. At the same time Students and teachers should work both systems in parallel for some period of time to become the familiar with the system. Curriculum updating and enhancing teaching capabilities with new technology is also important.

6.0 Guide lines for a new design approach

ICT education should be designed with following two key features.

- A curriculum in ICT for secondary school education that is in line with current international trends.
- Outline a program of professional development for teacher to implement the ICT curriculum successfully.

At present ICT curriculum development is complete in some areas with respect to the some activities in ICT education. However it should be evaluated and revised later stage if needed. At present, the education system in government schools has ICT only to grade 10 and above. There are 6738 schools, 3,498,336 students and 185,596 teachers in type 2 and above schools. The computer infrastructure facilities, resources and professional development for teacher to implement the ICT curriculum successfully presently in place are not adequate. Most of the teachers have obtained two to three weeks training and

they not catering to teach ICT subject for Grade 10- 11 and Grade 12. The Ministry of education in targeting to maintain the basic ratio of 75:1 par student: computer. Most of schools maintain this ratio and others not as yet. The governments aim is to provide the most comprehensive education possible for their citizens within the constraints of available finance. Because of the crucial positions of ICT in modern societies, its introduction into secondary school will be high on any political agenda. In Sri Lanka, ICT education functions under several shortages. As an example one can consider the following statistics which show that at present 76% of our schools system have electricity, 26% of them have land phones. Internet and E-mail facilities are available in a very small proportion of schools and rate at 6.4% and 4.1% respectively (Ministry of Education, 2006).

Shortfall

To alter this shortfall, In addition to the human resources, computer labs and other facilities, proper guide lines are necessary for the successful implementation of ICT education. Therefore it is required to design a proper system for its enhancement and sustainability.

At present for all schools, ICT, human and physical resources are not properly distributed in some standard mechanism or formula. Therefore they have some disparities. Using this disparity we can enhance our ICT education system as follows.

6.1 Methods on enhancing the ICT education in the school system

There are limited amount of ICT human & physical resources in our education system. The students and teachers should share available resources and existing knowledge among the relevant society. This sharing can be traditional teacher oriented and/or using learner oriented approaches. This model should be started from schools and it can be extend to zonal levels, districts levels, and provincial levels, on an all island basis and global capacity.

This model is represented as follows.

Teacher oriented Leaner oriented

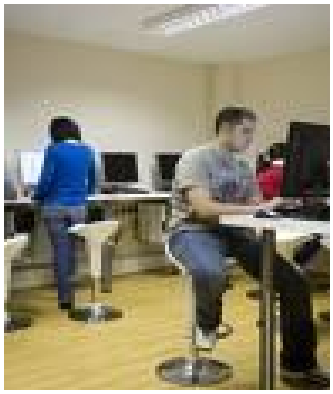


Teacher





Student



This model, will utilize existing resources with applying blended technology, (such as face-to-face & virtual class room approach using e-learning technology) to the School ICT education goes to enhance sustainability. Using the existing resources, ICT education can be performed in a few years as follows in both parallel techniques. To enhance the ICT education it is required to identify the strength and weakness of the present system

6.2 Strength and weakness of the present system

Strength

- Some schools have capable ICT human resources and well equipped computer facilities for ICT education
- School net and modern distance learning technologies are available in most areas of the country

- Universities and higher educational institutes are scattered to some extent in the country.
- ICT technology is distributed to most of the rural areas in different ways.
- In addition to English, Sinhala and Tamil computer interfaces are implemented to some certain extent

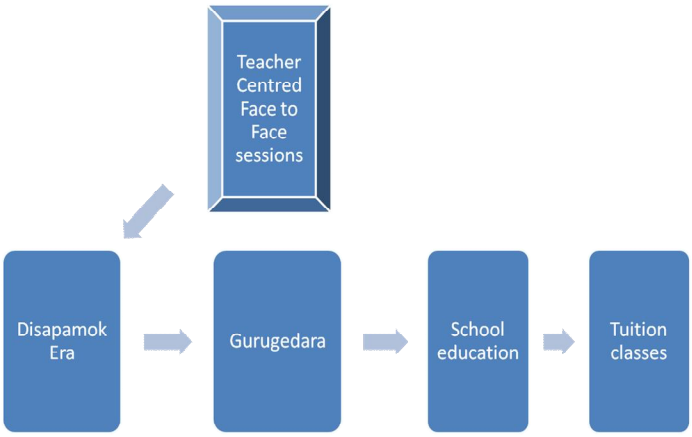
Weakness

- Most of rural students and parents do not identify the importance of a the general education as well as ICT education even if they have human and physical resources
- National and high privilege schools are those most enriched with human and physical resources
- There is a Digital divide in the country
- The Poor salary structure for IT staff of government as compared to the private sector
- The constraints of available finance
- No ICT cadre positions in the Sri Lankan School System
- Insufficient training organizations for new ICT cadre requirements
- No proper planning for ICT education

6.3 Solutions for the ICT Digital divide

Considering the above facts it shows there are some disparities in ICT education in Sri Lankan Schools. However all students of GCE (O/L) & GCE (A/L) should sit for a common national paper for ICT & GIT with or without required facilities. Education is a human right and ICT too. Therefore until the required ingredients to ICT education are fulfilled, all should utilize the existing resource in an economical way without violating human rights for an ICT education.

6.4 Past present and future education



Commencing in the ancient “disapamok” era to traditional “Gurugadara” to the present day, modern international schools and mass tuition classes education has been primarily “teacher oriented”. In this model, teaching and learning is face-to-face between teacher and students. On some occasions it is called “spoon-feeding.

Some competitive exams like GCE (A/L) teachers (especially tuition masters) train students only to open the entrance door to university but nothing else. This model is not applicable and not recommended for existing physical, Hunan resources for the ICT education of Sri Lanka

Leaner oriented education

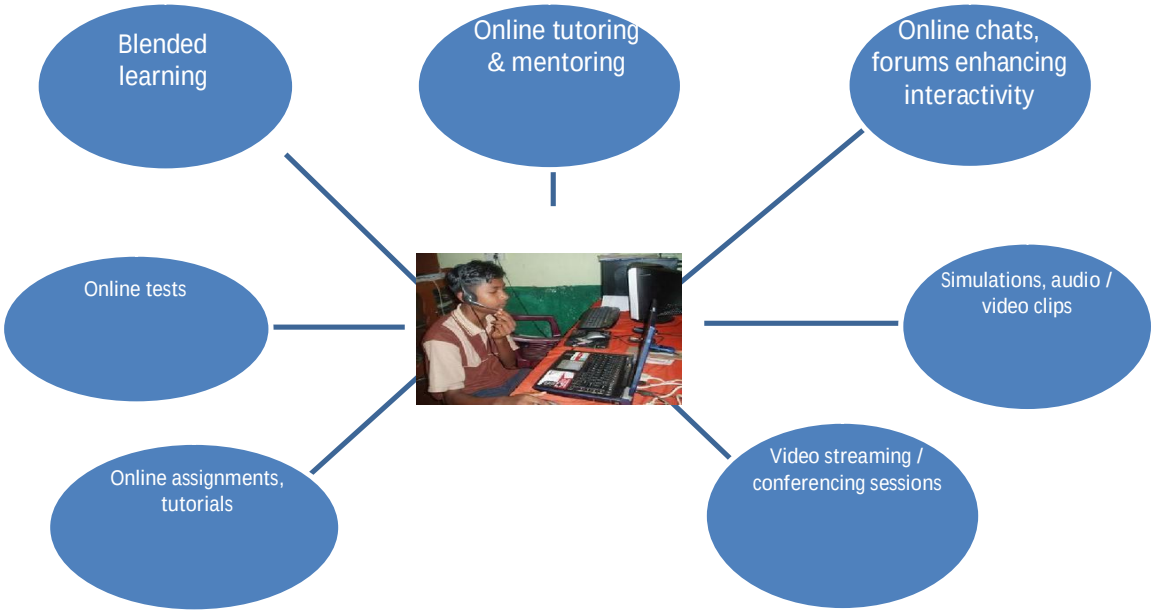


Figure : Student oriented teaching Methodology

This model is an internationally accepted model and most counties use this approach for several kinds of teaching / learning applications. For Sri Lankan schools this model will not directly apply for the teaching/learning process, because among the Sri Lankan schools a digital divide exists. That is, some schools have enough human and physical resources but most of schools haven't enough resources to adopt the teaching/ learning process.

6.5 How, ICT technology can apply to minimize the digital divide in Sri Lankan schools.

"I never teach pupils, I only create conditions in which they can learn themselves".

Albert Einstein

At present our Sri Lankan students will learn ICT in the class room face-to-face with the teacher. This is a traditional method and is teacher oriented. The financial constraints in our country and existing human and physical resources do not permit the complete

removal of the digital divide in the country using this methodology. Teacher/ student relationship merely contributes to maintain the present culture of Sri Lankan schools. Therefore this methodology is intrinsic to our culture and continues however with the addition of new technology.

6.6 Blending approach for ICT Education in Sri Lankan Schools

The pass rate of the ICT subject at 2007 GCE (O/L) is acceptable under the present facilities. The Ministry of Education and other organization such as the National Institute of Education, National Education Commission etc continually arrange programs to improve the quality of ICT education. The aim of improving without any interrupts how to utilize the existing human, physical resources and using ICT modern technology will be discussed in this approach. The following activity model shows how to improve ICT education in Sri Lankan schools with the use of a blending approach of traditional teacher oriented and leaner oriented techniques.

Activity -1: Peer-to-peer students group activity model

In a parallel class room, there are students of different skills. To share knowledge among different student the following activities can be performed.

Teacher oriented studies	Student oriented studies
Questions and answers	e-mail and on-line chatting
Group discussion	On-line forum
Text book	Multi-media contents/ e-books

Activity -2: Master – slave: (teacher – student) activity model

In a class room or different locations teacher- student activity can be performed as follows

Teacher oriented studies	Student oriented studies
class room teacher	On line tutor or mentor
Group discussion with teacher	On line forum
Brainstorming	On line chats/ discussions
Physical assignments	On line assignment
Examination	On line examination

Activity -3: Peer-to-peer teachers group activity model

In different schools, teachers have different skills. To share and exchange their knowledge among them, the following activities can be performed.

Teacher oriented studies	Student oriented studies
Questions and answers	e-mail and on-line chatting
Group discussion	On-line forum
Text book	Multi-media contents/ e-books

Activity -4: Master –slave Teacher trainer - teacher model

In a training collage or training centre teacher trainer – teacher activity can be performed as follows:

Teacher oriented studies	Student oriented studies
class room trainer	On line tutor or mentor
Group discussion with trainer & teacher	On line forum
Brainstorming	On line chats/ discussions
Physical assignments	On line assignment
examination	On line examination

7.0 Recommendation

The Ministry of Education and related institutes continually provide infrastructure facilities, computer labs and related resources and human resources to develop ICT education in Sri Lankan Schools. ICT education was introduced and evaluated using a national examination at GCE (O/L) since 2006. There are 6738 schools with grades 10 and 11. An ICT curriculum was introduced and teachers trained by applying various training methods, from such training institutes as the National Institute of Education, universities, training colleges and private computer institutes. Most of teachers got 3 weeks training on MS-Office and similar areas. According to the on site observations, most teachers have not required proper training to teach O/L- ICT and A/L-GIT subjects in schools curriculums. At present there is no cadre for ICT teachers in the schools system to teach ICT subjects. In addition to that, the government has planned to commence a computer science subject for GCE (A/L) from 2009. At present there are no proper training colleges to produce skills teachers to cater to the above teaching requirements. Therefore proper ICT teaching is a big challenge for the Ministry of Education. The proposed model shows how to utilize existing resources to enhance ICT education as a short term as well as long term solution to enhance and maintain the

suitability of the system. In addition a blended technology that has internationally accepted techniques to student oriented education. This model is designed by considering the traditional face-to-face teaching methods; local requirements combined with an internationally accepted blending student oriented method with aim of enhancing and maintain sustainability of the ICT education in Sri Lankan schools.

8.0 Conclusions

All infrastructure and computer related resources for ICT education should be implemented immediately. At the same time it is necessary to identify the cadre requirements and design proper planned training methodology to cater to the present curriculum and its future expansions. The proposed model can be applied at the initial stage as well as throughout its entire life cycle as a solution with the use of existing resources and technology for a concrete solution,

However, there are several challenges to overcome when transforming the existing into a blended technology based ICT education. At the same time content revising, updating and m many changes according to implementation is another challenge. To overcome all above challenges it is necessary to have proper leadership, guidance and a well planned vision for the future.

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