

## **SHILPA SAYURA – LOCALIZED SELF AND GROUP E-LEARNING SYSTEM FOR HANDICAPPED STUDENTS IN REMOTE, RURAL COMMUNITIES OF SRI LANKA. SHILPA SAYURA MEANS SEA OF KNOWLEDGE AND SKILLS**

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***Abstract:** Initiated by E fusion as a Reserch Project with the assistance of ICTA e-SDI, developed Digital System for empowering remote, rural students though self learning. Shilpa Sayura covers 50% of content in Sinhala for grades 6 -11 based on national curriculum covering 8 Subjects Sinhala, Math, Science, Social Science, Art, Dance, Music and Environmental Studies.*

### **INTRODUCTION**

Initiated by E fusion as a Reserch Project with the assistance of ICTA e-SDI, developed Digital System for empowering remote, rural students though self learning. Shilpa Sayura covers 50% of content in Sinhala for grades 6 -11 based on national curriculum covering 8 Subjects Sinhala, Math, Science, Social Science, Art, Dance, Music and Environmental Studies.

The system was piloted with 20 Nenasala Tele Center Communities and support provided. The system has a content core, Testing Engine, and Learner front end. Although implemented in Sinhala Language and Locally in deep south, Shilpa Sayura addresses a global problem faced rural communities in a unique way on innovation using local language, community oriented software architecture and sets a new direction for community ICT.

The purpose of this publication is to inform project information, Technology and methods , to share leanings and obtain feedback and support for this research project expansion.

### **Background**

Based on 2006 island wide GCE O/L examination statistics by examinations department, 51% of candidates failed on O/L exam. 55% failed in Math, Science and English. 65% of students failed compulsory geometry question. As we observed in rural field visits, interviews with students, teachers and parents and community discussions there were several factors contributing to this problem. Lack of Teachers was the main problem.

We saw enabling interactive self and group learning using digital content would be a method to overcome above problems. This idea was further researched studying Nenasala Tele Centers, e-Learning Systems, Available Educational Content, School Curriculum etc.

Another issue we faced was technology for managing large content system in Sinhala Language, which has not been implemented before. Although Sinhala Unicode standard is available, large databases and applications haven't been tried before.

Shilpa Sayura Project was designed as a bottom up development project. It was made to dynamically learn, to change and improve it self based on community needs, feedback and new opportunities available to develop rural human resources using ICT.

### **Shilpa Sayura Content Map**

A content map was prepared based on NIE curriculum by a group of Teachers (TFEC) formed by Shilpa Sayura Project. The content map included over 8000 units, and suggested how each lesson to be organized in text, images, animations etc. The content map was reviewed by TFEC the Teachers

Group, ICTA and PWC who was funding and process consulting the project.

### **Shilpa Sayura Content Base**

The content base was generated and reviewed by a panel of school teachers from around the country and piloted with school children and teachers from 20 Nenasala communities. The feedback received has been used to further upgrade subject matter and improve its delivery.

The content includes text, supported by movie clips, photographs, animations and interactive exercises, java applets, It goes far beyond a textbook's ability to impart subject knowledge.

### **Shilpa Sayura Technology**

See Fig. 1.0

### **Uniportal CMS**

The Content Management System based on ADO and ASP, running on IIS. We planned for minimum technology available in Nenasala Network, The System enable up scaling to SQL server as well as porting to PHP/MYSQL to be platform independent. The CMS has multi editors, and access levels, ability to switch to multiple database to distribute content and still be fast on a simple computer with least ram 64 MB.

At the time of designing technology concepts, instead going hi-tech, we focused on using existing resources at Nenasala Tele Center, and the needs of rural community, the ease of maintenance, Remote Tec Support and trouble shooting to create a new architecture from scratch. The CMS handles multiple Subjects runs down design independent hierarchies, similar framework has been used by e fusion for the development of Sri Lanka government portal ([www.gov.lk](http://www.gov.lk)).

Creation and managing Text, Graphics, Maps, Videos, Audios, flash, quick time and shock wave was quite possible in the CMS it self giving convenience for editors and developers.

### **Uniportal Testing Engine**

Include facilities to manage different types on multiple questions, as well as Structured Questions. Questions are managed by Subject as well as by Lesson and Grades.

### **Uniportal E-Learner**

The Front end enables providing of digital IDs to students. Students login in can access content by curriculum or can drill deep through hierarchy. They also can create personal profiles, create own content and share works created among the group. Group Discussions, comments, Rating and Personal Content map is included.

### **Other Tools**

Special Unicode Input Tool efusion~Uniwriter was integrated for multi lingual , Multi Keyboard for content creation.

### **Shilpa Sayura Impact**

Shilpa Sayura provides an interactive means of self study and as a teaching resource to children in remote communities who do not have access to urban educational resources.

Shilpa Sayura will eventually be deployed across the entire network of 376 Nenasalas around the country.

The system was highly appreciated by students, teachers, community and professionals. This is the first ever Sinhala Language e-Learning System they had experienced. The inclusion of Indigenous content attracted even elders to use Shilpa Sayura. People were amazed to experience totally Sinhala language interface and content for learning.

Shilpa Sayura has surrounded rural communities with splendor when they didn't have any, Specially for those who would think, the only way out of poverty is knowledge, which many of us have experienced in our lives.

### **Current Progress**

Shilpa Sayura has implemented in 26 Nenasala Locations. Trial implementations were made in 7 Schools in Deep South and 2 Schools in Central Province to help review content and usability testing.

### **Key Issues Identified**

The capacity of Telecasters are only enable Basic ICT Skills teaching. Facilitation for School Curriculum Learning require initial guidance for students, who are not used to self learning.

Being remote and rural many Nenasala Tele Centers haven't tried e-learning with students before, this required capacity building in Nenasala for creating an e-Learning environment.

### **Shilpa Sayura Capacity Building**

The capacity building involved developing a ICT communications and Sinhala Unicode Skills, Staff training, community promotion and tech support. A dedicated management and technical team from e fusion, allocated for this purpose.

### **Online forum**

An online forum and a demonstration website was setup to develop Shilpa Sayura awareness and to communicate with operators. Project enabled participative development, developing a Shilpa Sayura stake holder network. Stakeholder capacity building helped to overcome issues when operating Shilpa Sayura as a networked group.

Demo Web site : [www.shilpasayura.org](http://www.shilpasayura.org)

### **Support Group :**

<http://groups.google.lk/group/ShilpaSayura?lnk=li&hl=en>

### **Shilpa Sayura for Linux**

Presentations made to FOSS community and discussions on Shilpa Sayura Sinhala Technology framework, request was made to port Shilpa Sayura also to Open Source Platforms.

### **New Content Needs**

In the Pilot Phase Shilpa Sayura targeted to cover 60% of Content Required for grade 9 to 11. The year 2007 curriculum changes has added 15% new content. There for about 48% of O/L content still to be created.

### **Increasing Employment Capacity with ICT**

Many students in rural communities are compelled to go into art theme even they get adequate passes to study science stream. This has created a major competition in Art stream University entrance and discontinues education due limited university intake.

Shilpa Sayura wish to address this issue with employment oriented content leading to a step wise online degree in ICT through e-Leaarnng from University of Colombo.

### **New Subjects in Demand**

English, Tamil, ICT and Electronics, and A/L subjects are in demand at rural communities. The content needed for ICT and a demand exist in agriculture, self development, management and marketing content by rural communities.

### **Pilot Project Budget : Rs. 5m distributed as following.**

Equipment and Infrastructure	14%
Software & Content development	56%
Implementation & Marketing	12%
Maintenance	10%

Administrative Costs 8%

### Achievements

Shilpa Sayura presented at e India 2007 Conference and Won prestigious i4D Award in New Delhi and Won Stockholm Challenge GK3 Educational Sector Award at Kuala Lumpur, Malaysia in Dec 2007. Shilpa Sayura has been commended by World Bank as “ICTA e-Society Flagship Product”

### Conclusions

Rural Community ICT need to ensure simple, efficient, affordable access to all, taking Rural community expunctions and local language as bottom line.

The cutting edge may fail in rural communities with the barriers of support, travel and communications. Its best to keep technology as simple as possible.

Each remote, rural community is unique in some way, hence ICT implementations need to be considerate of the community and their Culture which has a great binding their lives.

Enabling rural ICT based learning has best impact when approached bottom up. Creating openness in ICT community projects enables great support, enthusiasm, idea generation and develops a safety network.

Working and living in rural communities may have health and other hazards, adapting to harshness is absolutely necessary.

Shilpa Sayura research produced a local language basd community education ICT platform, which addresses a global rural community issue, and shows a direction for localization is to start from scratch considering the needs of rural communities prior to technological excellence.

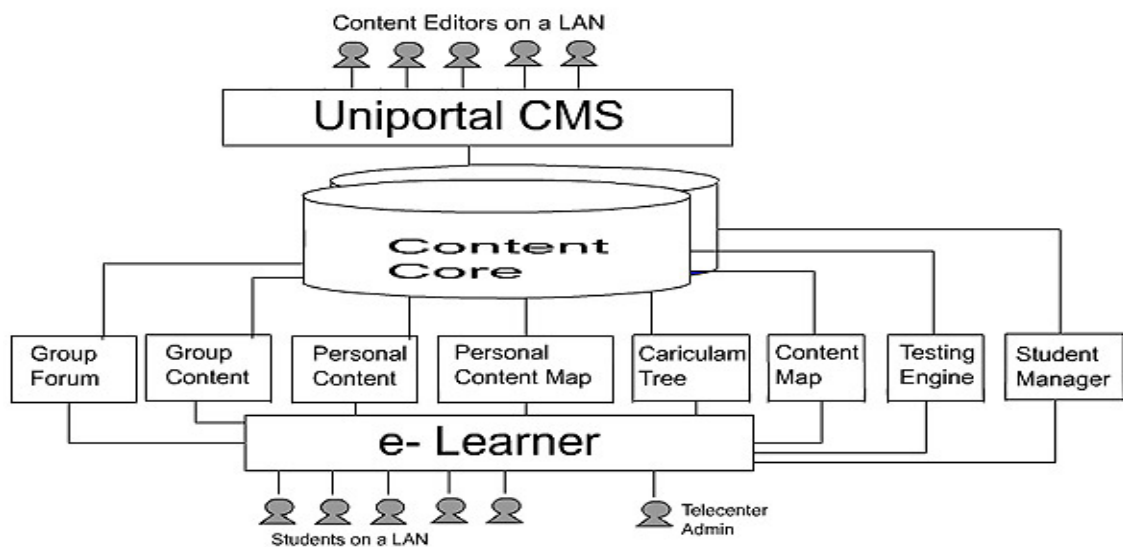


Figure 1. Integrated view of Shilpa Sayura System

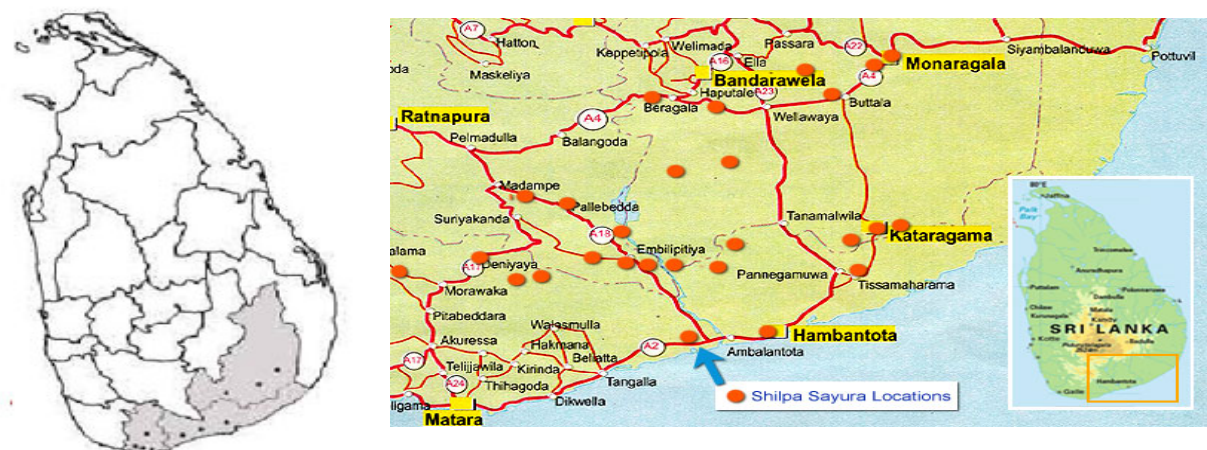


Figure 2.0 . Implemented Geography

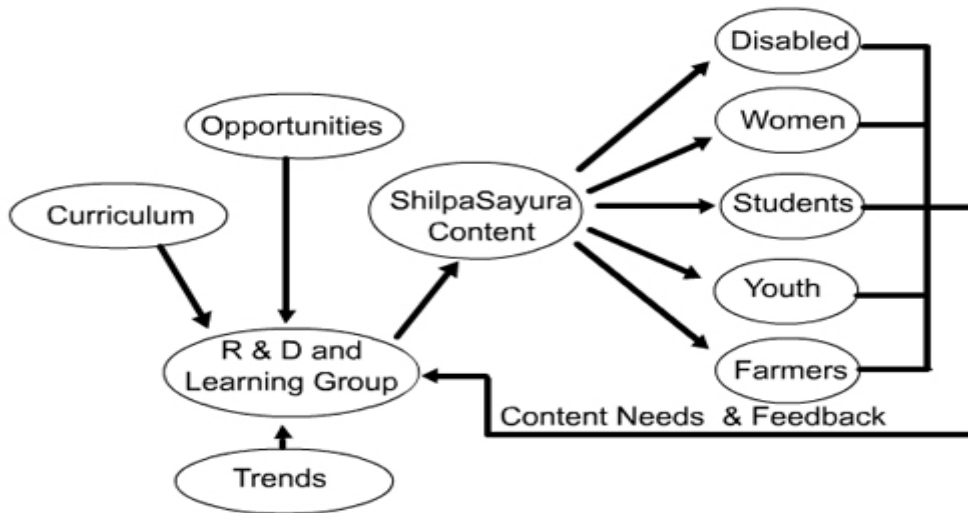


Figure 3.0 : Content Needs

Title	Test	Images	Diagrams	Audio	Video	Est. Units
6 ಅಭ್ಯಾಸ						
ಅನಿರೀಕ್ಷಿತ ಸಂಭವಿಸಿದ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			1
ಅನಿರೀಕ್ಷಿತ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			2
ಅನಿರೀಕ್ಷಿತ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			2
ಅನಿರೀಕ್ಷಿತ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			2
ವಿದ್ಯಾರ್ಥಿ ಅನಿರೀಕ್ಷಿತ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			2
ಜೀವ, ಆರೋಗ್ಯ	1	1	1			1
ರೂಪ, ವಿಷಯ	1	1	1			1
ಅಭಿವೃದ್ಧಿ	1	1	1			1
ಅನಿರೀಕ್ಷಿತ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			1
ಅನಿರೀಕ್ಷಿತ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			1
ಅನಿರೀಕ್ಷಿತ ಸಂದರ್ಭಗಳಿಗೆ ಸಿದ್ಧತೆ	1	1	1			1

Figure 4.0 Content Map



Figure 5.0 Interface

## **BIBLIOGRAPHY**

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- [6] Shilpa Sayura Project Plan
- [7] Shilpa Sayura Project Report I & II