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Effective use of Multimedia for Teaching Languages to Adult Illiterates: A Case Study in Tamil

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Abstract

One of the big challenges for India at the turn of this century is illiteracy. India has about 150 to 200 million Indian illiterate adults, as per the 2001 census, and this number is growing every year! Further, the increase in literacy levels between 1991 and 2001 is less than 13 per cent. The National Literacy Mission (NLM) is making all-out efforts to tackle the problem by constituting Adult Literacy programs and Continuing Education programs across the country. The conventional methods used in such programs take anywhere between six and 18 months to convert an adult from an illiterate to a functional literate. Moreover, the whole process is highly dependent on trained teachers who are in short supply. Tamilnadu, for example, has a literacy rate of around 73 % and efforts to raise it call for a faster and more cost-effective methodology.

This paper describes the approach of a successful Computer Based Functional Literacy (CBFL) Programme, pioneered by TCS, in imparting reading skills in Tamil to illiterates, both as a pilot as well as over large numbers across the state. The key success factor has been the effective use of multimedia technology. The "success" factor involves the following:

a) "Luring" the illiterates to attend the entire program, through compelling and exciting interfaces and interactions (familiar to the rural and illiterate people).

b) Handling the nuances of a language like Tamil, where the pronunciations are often contextual.

c) Enabling the teacher to use it effectively in handling individual learning difficulties of adults.

The CBFL Program uses a puppet show metaphor for the Graphic User Interface (GUI) supported by absorbing animation and audio.

Tamil, in this approach, is taught through a set of 20 lessons, with emphasis on primary and secondary words in each lesson. The lessons have been developed by taking the material prepared by State Resource Center (SRC) under the National Literacy Mission (NLM) and adopting to suit the computer-based program. The lessons take the learner from the simplest to the more difficult words, in a graded manner. Audio has been added to stress on the specific pronunciations of alphabets, especially when they are contextual. Animations have been added to show the formation of words with various combinations of the alphabets.

The implementation issues have been effectively addressed by having facilitators handle small batches of 10-15 adults. Further, the software design makes it flexible to dynamically navigate or sequence the teaching patterns to suit the class or any specific group of people within the class. The software also includes online quizzes, search and navigation facilities and on-line formation of new words. All these enhance the capabilities of the teacher to personalize the class as per the particular profile.

The software and the teaching methodology have been very effective. CBFL teaching centres have been set up in various parts of the Tamilnadu state and continue to keep the adults coming back to regularly attend the exciting classes. The net result – successful reading skills in a period of 3 months spending about one to two hours per day! A few case studies are discussed to reinforce the "successes".

1 THE SCENARIO

As the countries of Asia prepare to enter the 21st century and face the new challenges of globalisation and market economies, the importance of literacy for all has become self-evident. The breakdown of tradi tional support networks caused by mobility and urbanisation combined with the increased needs of colla boration add new and growing demands on literacy skills among the people of the region. The popular view of literacy as the ability to read and write one's name or a short text in one's mother tongue has proven to be insufficient in the context of the highly differentiated ethnic and linguistic cultures of Asia (Mayor, 1998).

A background report prepared for the Ministry of Information Technology (Government of India) by a Working Group on 'Information Technology for the Masses' (Ministry of Information Technology, 2000), covering specifically the 'Enabling Literacy and Education for the masses', states that "In spite of the Literacy Mission launched by the government more than a decade ago, India continues to have the largest population of illiterates in the world. The percentage of illiterates is considerably higher amongst women in the country. In an information driven society, where socio-economic growth depends on capability to acquire and effectively utilise information, it is necessary that citizens not only be fully literate but also be educated in true sense (not just limited to formal education) so that they could fully exploit the benefits of technological advancements in various fields".

The National Literacy Mission (NLM) has aims at imparting functional literacy to millions of illiterate persons in the age group of 15-35 across the country. NLM is based on the premise that literacy is an indispensable component of human resource development and an essential tool for communication and learning, for acquiring and sharing of knowledge and information, a pre-condition for an individual's growth and for national development. NLM also aims to harness the advances in Science and Technology and of the communication and pedagogical sciences, for the benefit of the deprived sections of society (Department of Education, 1998).

2 SOME REVEALING STATISTICS

Who is a Literate? According to the National Literacy Mission of India, “A person is literate when he has attained skill in reading and writing simple text and numeracy.” Further, the NLM estimates a time frame of 200 classroom contact-hours for basic literacy.

India had an illiterate population of 287,000,000 in the year 2000, with a literacy rate of 57.2 %! The literacy rate rose to 65.4 % as per the 2001 figures. India desires to reach a literacy rate of 75% across the board by 2005, for men, women and overall!

The growth rates and gender-wise statistics are shown in Figures 1, 2 and 3.

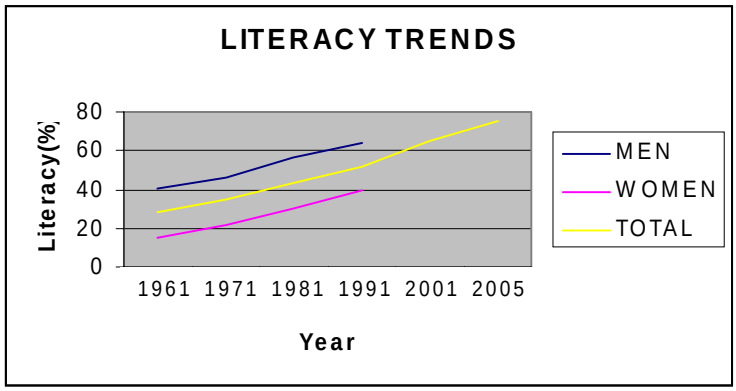


Figure 1: The Trends in Literacy Rates since 1961

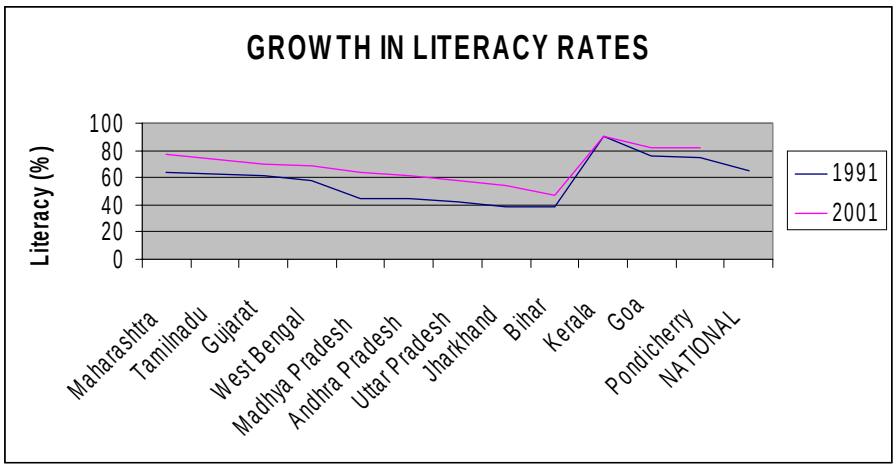


Figure 2: State-wise Literacy Trends

Among the states selected for consideration by Tata Consultancy Services, based on the 2001 census figures:

There are three states above 80 %- Kerala (90.92), Goa (82.32) and Pondicherry (81.49). Maharashtra (77.27), Tamilnadu (73.47), Gujarat (69.97) and West Bengal (69.22) lie in the 65.4-80 % range. Madhya Pradesh (64.11), Andhra Pradesh (61.11) Uttar Pradesh (57.36), Jharkhand (54.13) and Bihar (47.53) lie in the < 65.4 %range.

The states have been specifically identified, as these are some of the states where the CBFL programmes of the Tata Consultancy Services have been initiated.

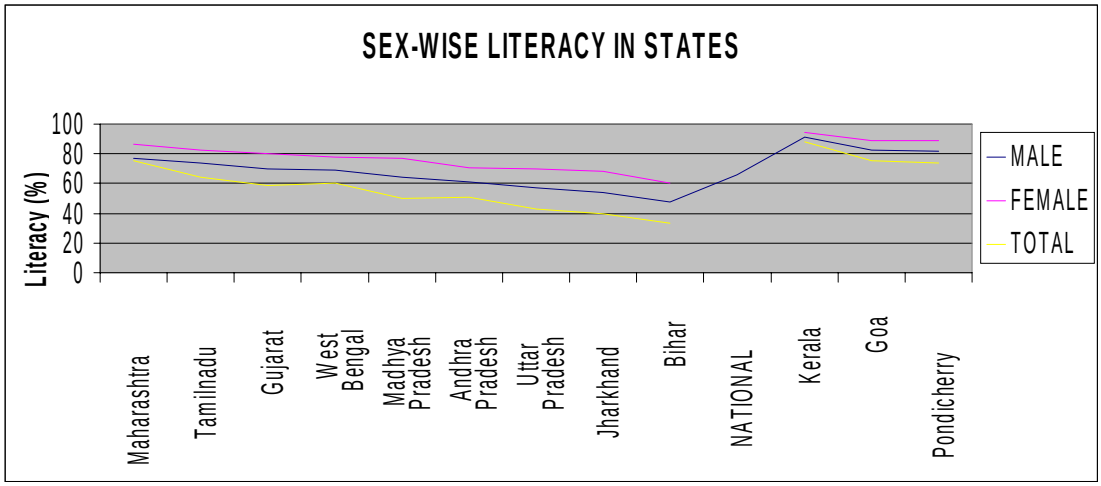


Figure 3 : Sex-wise Literacy Rates in States (2001)

3 THE CBFL PROGRAMME

The Computer-Based Functional Literacy Programme (CBFL), pioneered by Tata Consultancy Services, is the brain-child of Dr. F C Kohli, more known as the Father of the Indian Software Industry. According to him, an average adult in India is fully conversant with the spoken language and the vocabulary specific to the person's region/state. However, what is lacking is the individual's ability to correlate the spoken word with its associated written form. This serious handicap has, very often, led to individuals signing documents, the contents of which are unknown and more than often resulting in forfeiting property and/or becoming bonded for generations!

The CBFL material is primarily driven by the well-researched texts prepared by the National Literacy Mission, a well-thought out decision, for it ensures continuity in learning even after the CBFL sessions are completed. The CBFL material makes use of animated graphics and a voice-over:

- To explain the logical formation of the words
- To help pronounce the words correctly

The lessons tailored to teach various languages follow well established principles of cognition, language and communication.

The software developed by TCS has demonstrated the possibility of making an adult illiterate capable of reading within 10 weeks at the upper limit and the system is not dependent on the use of trained teachers. Further, TCS has seen this to fruition and made it proven by donating a large number of computers to the various learning centres across the country.

4 THE INSTRUCTIONAL STRATEGY

The puppet show metaphor was used to create the much-needed motivation in the learner, this being a very popular entertainment medium in rural India. Puppet shows are very common in relating mythological stories, folklore and even promotion of social causes such as good health, good sanitation, prevention of social ills and awareness on AIDS.

Traditional stage settings were simulated and alphabets were made to come down, wriggle and combine to form words. These words were then pronounced through a voice-over with umpteen

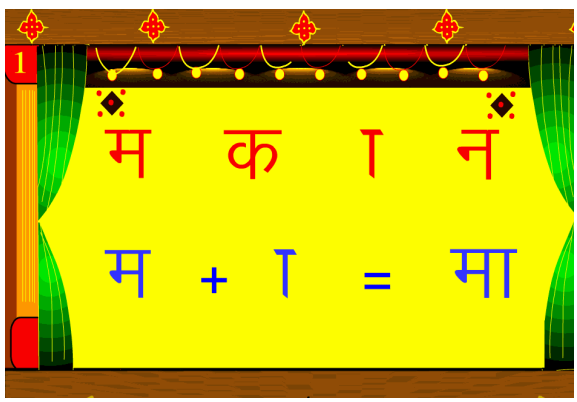
repetitions to ensure learning. This concept was extended later to words, sentences and even stories. The initial experi ments in Andhra Pradesh with Telugu (Figure 4) even saw the usage of flashcards (carrying the alphabets/words) as reinforcements to learning!

Figure 4: The Puppet Metaphor as used in the Telugu Programme

Various forms of the puppet concept have been used in the packages in Hindi, Bengali, Marathi, Tamil and Gujarati (Figure 5).

(a) The Bangla Programme

(b) The Marathi Programme



(c) The Hindi Programme

(d) The Gujarati Programme

Figure5: The Metaphors used in the various Indian Languages

5 THE TAMIL PROGRAMME

The paper presents the CBFL programme specific to Tamil. Tamil, as a language, has nuances that are unique to it. Following are some of the unique characteristics:

It has about half the number of alphabets found in all Sanskrit-based Indian languages. A specific alphabet in Tamil can have more than one pronunciation, based on the context of use for example, Tamil has the alphabets **KA** and **ENGA** only as compared to **KA, KHA, GA, GHA and ENGA** in Sanskrit-based languages (Hindi, Bengali, Marathi, Telugu and so on)

The subject nuances result in problems of pronunciation. More specifically, the puppet metaphor followed by the audio, gives rise to “problems” for example, the alphabet **TA**, in combination, can be pronounced as **TA** or **DA,** depending on the context of usage. The problem was solved by finding pairs of such alphabets and then individualizing them by specific words, followed by repetition and comparisons repeatedly until it registered in the learner’s mind (Figure 6).

Figure 6: A representative screen highlighting different pronunciations of the same alphabet

Tamil, in this approach, is taught through a set of 20 lessons, with emphasis on primary and secondary words in each lesson. The lessons have been developed to take the learner from the simplest to the more difficult words, in a graded manner. Audio has been added to stress on the specific pronunciations of alphabets, especially when they are contextual. Animations have been added to show the formation of words with various combinations of the alphabets (Figure 7).

Figure 7: Picture of Sample Screen showing Word Formation

The implementation issues have been effectively addressed by having facilitators handle small batches of 10-15 adults (Figure 8) per class. Typically such classes are held one or two hours per day. A batch takes about 10 weeks for the students to complete the 20 lessons and become conversant with reading Tamil text in newspapers, posters and such materials.

With the entire set of lessons in the computer, the role of the teacher, called facilitator is more towards 'facilitating' the students in the class to listen and see the CBFL program in computer and learn.

Figure 8: A CBFL class in progress

The software design makes it flexible to dynamically navigate or sequence the teaching patterns to suit the class or any specific group of people within the class. The software also includes online quizzes, search (Figure 9) and navigation facilities and online formation of new words using a text editing facility (Figure 10). All these enhance the capabilities of the facilitator to personalize the class as per the particular profile.

Figure 9 : Searching list of words having a selected alphabet and navigating to a selected word

Figure 10: Online formation of new words using a text editing facility

The software and the teaching methodology have been very effective. CBFL teaching centres have been set up in various parts of the Tamilnadu state and continue to keep the adults coming back to regularly attend the exciting classes. The net result – successful reading skills in a period of three months!

An advanced version of the package provides a facility of teaching writing skills just by showing various alphabets in animated form of how they are written. The visual effect of such animation is effective in making the students understand and repeat the exercises of writing methods. Facility to repeat such ani mation as required makes it user friendly for the facilitator to teach the writing skills (Figure 11).

Figure 11: Writing skills using animation

6 TAMIL CBFL PROGRAMME: SUCCESS STORIES

Tata Consultancy Services has partnered with various Non Governmental Organizations (NGO) who have set up about 130 such CBFL centers and are conducting this program. TCS has started this program under the Corporate Social Responsibility initiative as a social service. The

objective of TCS has been to leverage its technological experience and strength for a social cause. TCS has donated computers to most of the NGOs for this purpose whereas some NGOs are planning to get such computers through sponsorship from various agencies. TCS provides this software free to the NGOs and also conducts a free training program for the facilitators to enable them to conduct the classes.

Figure 12: Functions to mark the completion of batches of classes

Currently there are about 130 such CBFL centers in 8 districts in the state. About 1200 students have completed the course and about 1300 students are undergoing the course. With the initial success of the Program, many organizations working with TCS are planning to expand the program in their respective areas of operation.

The methodology of training for the illiterates using multimedia based software package has been unanimously appreciated by the beneficiaries (the students), the facilitators and the management of the organizations.

Typical feedback from the beneficiaries are:

“CBFL is a boon to the socially and economically backward village like mine. The CBFL Program is attractive and interesting and so motivates students to come to the class regularly because they feel that they are coming over to watch a movie or TV show,” says the local CBFL coordinator in a cluster of villages running 22 centers.

“The computer based learning is very interesting and easy to learn as the alphabets are coming in the screen along with sound. If we do not understand, the teacher repeats the alphabets and so we are able to learn. Now I am able to help my children in their studies and this has also showed me a new life,” says a 35-year widow who has learnt reading skills through the CBFL Program.

“I had no opportunity to go to school as my parents could not afford to send me. So I was having the idea that I will not be able to get education anymore. When I was told that I will be able to learn to read within 3 months and that too in my spare time, I could not believe. But when I started attending this class and learning to read, I was very excited and thankful for the people who showed me this way,” says a 18 year old girl who works in the field for a livelihood.

TCS along with the organizations running the centers, tries to motivate the students to continue their learning experiences. In some of the centers, small functions are arranged to mark the completion of batches. The students take this opportunity to demonstrate the new skills they have acquired by reading some passages from newspapers or books. (Figure 12) The students, who have completed the course, are given some certificates and books to read for keeping their interest sustained. Some NGOs combine the CBFL Program with some economic development

programs such as Self-Help Group schemes and so on, for the people trained under CBFL Program.

7 ACKNOWLEDGEMENTS

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The people behind the scenes, Mr. P. Sathish Kumar, Mr. P. Vijayakumar and Ms. K. Krithika deserve the kudos for having made the experiment see the light of the day and made many an adult literate enough to communicate effectively. They were the key developers of the software of the Tamil version of the CBFL Program. They also conducted initial field trials and modified the software based on the feedback and implemented CBFL in various centers in the initial stages. The authors and the team can be contacted for further details through email address **som@chennai.tcs.co.in**.

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