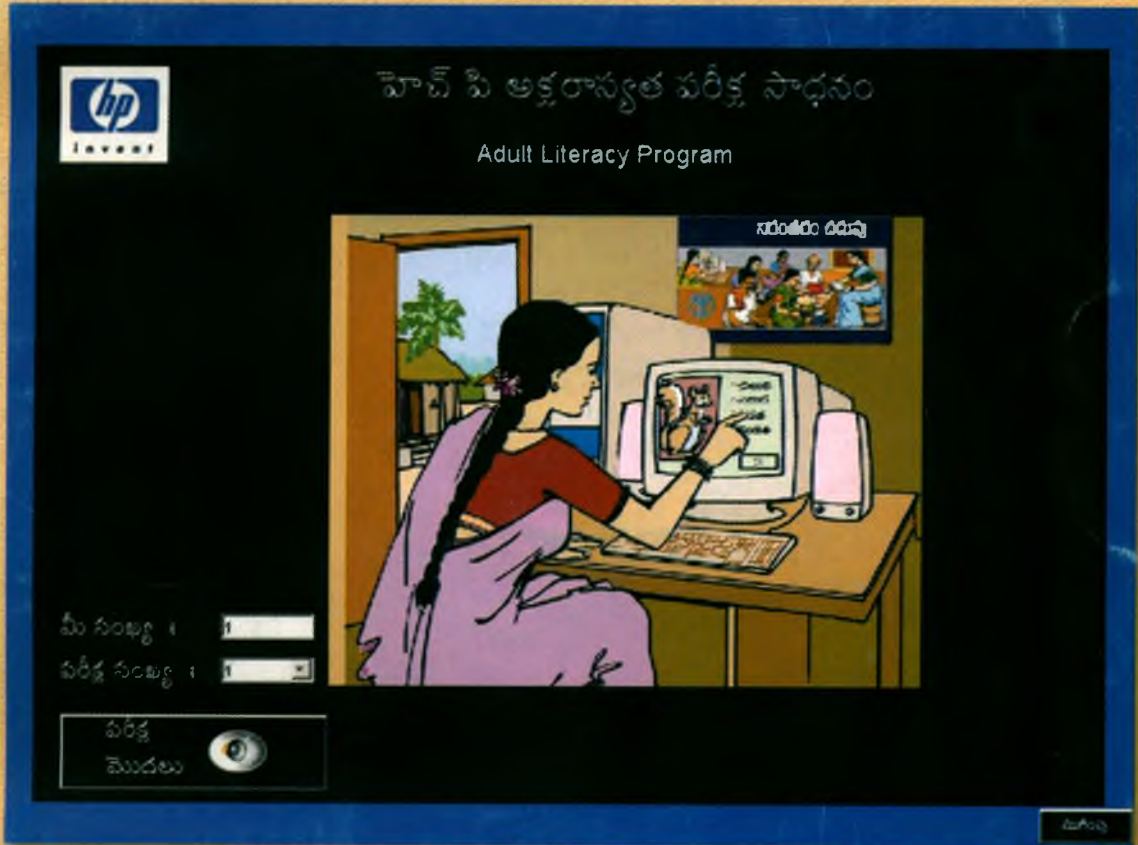


# PILOT STUDY OF HP LITERACY TESTING SOLUTIONS

## A Report



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State Resource Centre for Adult & Continuing Education - SPACE  
Andhra Mahila Sabha  
Hyderabad

# PILOT STUDY OF HP LITERACY TESTING SOLUTION

- A Report



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## **P R E F A C E**

A new era has commenced in the field of adult literacy with the intervention of Information and Communication Technology. It is a welcoming trend that multinational IT companies like Hewlett Packard are taking initiatives in this social endeavour.

As a part of HP's e-inclusion programme, Hewlett Packard has established an i-Community in the Kuppam constituency of Chittoor district, Andhra Pradesh. Several software packages were developed by HP as a part of this i-Community project that would provide easy access to information and services for improving the quality of life of people. Literacy and education have been chosen as one of the focus areas of HP's i-Community project.

HP Emerging Market Solutions and HP Labs India hope that the literacy testing solution described in this report would help in realizing the objective of Andhra Pradesh achieving total literacy by 2005.

HP had in-depth discussions with the officials of the Department of Education of Government of Andhra Pradesh, more specifically with Dr. I.V. Subba Rao, IAS., Principal Secretary, School Education for developing the HP Literacy Testing Solution. The State Resource Centre for Adult and Continuing Education was associated with the project as an agency to provide required academic support with financial assistance from HP.

On 8th March 2003 Hon'ble Chief Minister of Andhra Pradesh Sri Nara Chandrababu Naidu inaugurated the "HP i-Community Solutions Week" at Kuppam Mandal secretariat. For seven days different software packages developed by HP were demonstrated. The solutions were further refined on the basis of practical exposure during the week.

As advised by the Chief Minister the HP Literacy Testing Solution was field trialed on a large sample of adult learners as a part of a Pilot Study during June-July, 2003. The report you are going through is based on this Pilot Study.

**Prof. S. Padmanabhaiah**  
**Director, SRC**

## **Acknowledgements**

We are grateful to Sri Nara Chandrababu Naidu, the Hon'ble Chief Minister of Andhra Pradesh who kindly inaugurated the HP Literacy Testing Solution on 8th March 2003 at Kuppam Mandal Secretariat, appreciated the effort and recommended field trials on a larger basis.

And we humbly express our gratitude to the under mentioned.

- Dr. I.V. Subba Rao, IAS., Principal Secretary, Education, the Government of Andhra Pradesh for his continuous encouragement and valuable guidance throughout the pilot study.
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- Sri Sai Prasad, IAS., the then Collector of Chittoor district for providing necessary support and cooperation to conduct the study in Chittoor district.
- Sri A. Sarath, Special Officer, KADA, Kuppam who provided the services of his staff members and office premises for the successful completion of the pilot study.
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- Sri M. Thyagarajulu Naidu, Project Officer, Zilla Saksharatha Samithi, Chittoor who helped us a lot during the training programme of field functionaries and in the installation of the systems and monitoring of the testing.
- Mandal Parishad Presidents of Kuppam, Ramakuppam, Santhipuram, Gudipalli and V. Kota Mandals for soliciting their participation in the inauguration of pilot study in the respective mandals.
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- Mandal Literacy Officers of Kuppam, Gudipalli, Santhipuram, Ramakuppam and V.Kota Mandais, Sri M. Sundaram, Sri N. Venkatesh, Sri Venkataramana, Sri G. Vijayakumar and Sri M. Reddappa for their dedicated services provided throughout in facilitating several activities associated with the pilot study.
- Preraks of Continuing Education Centres of Kuppam, Ramakuppam, Santhipuram, Gudipalli and V. Kota Mandals who provided committed services in preparing the lists of participants, motivating and accompanying learners to testing centers, conducting reading sessions of the supplementary reader, administration of paper-pencil test of evaluation and conducting interviews of learners etc.

Finally, we warmly acknowledge all the learners who participated in the different phases of pilot study with enthusiasm and expressed wholehearted appreciation of the efforts.

## **Executive Summary**

Andhra Pradesh with its commitment to ensure a literate and knowledge society, has set up a primary goal of achieving total literacy by 2005, and is making every effort to achieve its objective. By the intervention of modern technologies like Information and Communications Technology (ICT), the objective of achieving total literacy will become easier and faster.

Hewlett Packard has provided such ICT intervention in the field of literacy to facilitate the objective of the Andhra Pradesh Government.

Hewlett Packard has developed a Literacy Testing Solution to assess the literacy skills of individual learners, with the support of the State Resource Centre for Adult Education, Hyderabad.

The HP Literacy Testing Solution is designed as a multimedia interactive Test. 30 questions measuring the three competencies of literacy namely reading, writing and numeracy are provided to the learners from a large question bank. As technology for testing writing skills directly is not yet available, it measures derivative writing skills.

Sri Nara Chandrababu Naidu, the Hon'ble Chief Minister of Andhra Pradesh, inaugurated the solution in March, 2003 and recommended field trials of it.

With the collaboration of the Directorate of Adult Education, Andhra Pradesh, the State Resource Centre for Adult Education, Hyderabad and the Zilla Saksharatha Samithi of Chittoor district, Andhra Pradesh the HP Literacy Testing Solution was field tested from 25th June to 26th July 2003 for one month. This pilot study was conducted in the Kuppam, Ramakuppam, Shanthipuram, Gudipalli and V. Kota Mandals of Kuppam Parliamentary constituency of Andhra Pradesh. The objectives of the study are to find out whether the HP Testing Solution is a valid and reliable test and whether learning can be facilitated by repeated taking of the test.

The HP Literacy Testing Solution was deployed in five mandal offices and learners were brought from villages to take the test. The one month pilot study was organized in three phases so that each learner takes the test three times during the study period.

A total of 403 neo-literate learners participated in the pilot study, in the first phase. Among them only 355 learners took the test during the second phase. And finally, 221 learners took the test the third time also.

To sustain the motivation of the learners and revival of literacy skills, a supplementary reader 'Bathukubata' was also arranged to be taught to the learners, during the study period.

During the third phase, the learners were administered a paper-pencil evaluation test for validation purposes. They were also interviewed to assess their experiences with the testing solution and suggestions for future improvements.

The analysis of the data has shown that the HP Literacy Testing Solution is a valid and reliable assessment tool and learners improved their performance over consecutive tests.

The analysis of feedback revealed that the instrument is able to inspire their enthusiasm by virtue of its multimedia interactive mode of operation. It was suggested to be kept in their continuing education centers for their repeated use.

In summary, the pilot study indicated that the HP Literacy Testing Solution is an instrument deserving wider application in the literacy programmes of Andhra Pradesh. As such, a model for large-scale deployment of the testing solution is proposed to the Government of Andhra Pradesh.

The HP Literacy Testing Solution may be deployed in every community learning center proposed to be established at Gram Panchayat level. More immediately, it may be deployed in the systems available at Mandal offices for the use of the Zilla Saksharatha Samithis for literacy assessment.



## **Chapter 1: Introduction**

### **1.1 Introduction**

Literacy is a prerequisite for development and empowerment. It is a crucial factor that enables individuals to comprehend their social, economic, political and cultural environment better and to respond appropriately.

Literacy is a window to the world of information and knowledge. It empowers individuals to participate in decision-making affecting their lives. Literacy enables one to acquire better skills leading to improved employment opportunities and achieving a better quality of life.

In summary, 'literacy is the key to the tool box that contains empowerment, a better livelihood, smaller and healthier families and participation in democratic life' as per Adama Quane of the UNESCO Institute of Education.

Literacy is generally thought of as the ability to read, write and do simple arithmetic. But acquisition of mere reading and writing abilities may not be relevant and meaningful to adult lives unless it is functional. Thus, emerged the issue of functional literacy.

According to UNESCO, the term 'functional literacy' stands for the ability to read, write and calculate so that a person may engage in all those activities in which literacy is required for effective functioning in his/her group and community and also enabling him/her to continue to use reading, writing and calculating for his/her own and the community development.

At the dawn of this 21st century, literacy has become a critical input into the process of development. It was included as a factor in the Human Development Index (HDI) by the United Nations Development Programme (UNDP).

Under the leadership of UNESCO, many countries are united in their fight against the problem of illiteracy, which is pulling their efforts for development, since the past five decades. The World Declaration on Education for All adopted at the landmark Jomtien Conference held at Thailand (1990) is a milestone in these efforts.

The recent World Education Forum held in Senegal (2000) is another expression of this international commitment. Two of the six goals of the Dakar Framework for Action – the international pledge made to provide education for all by 2015 – mentioned literacy.

### **1.2 The Literacy Scenario**

However, inspite of the efforts made, the problem of illiteracy is still severe. As per the estimates of UNESCO (2000), one in five adults aged over 15 were illiterate. There were about 860 million illiterate adults in the world. Among these, 70 percent live in Sub-Saharan Africa, South and West Asia, and the Arab States and North Africa.

East Asia and the Pacific report an overall literacy rate of 86 percent. Latin America and Caribbean region has 11 percent of illiterate adult population.

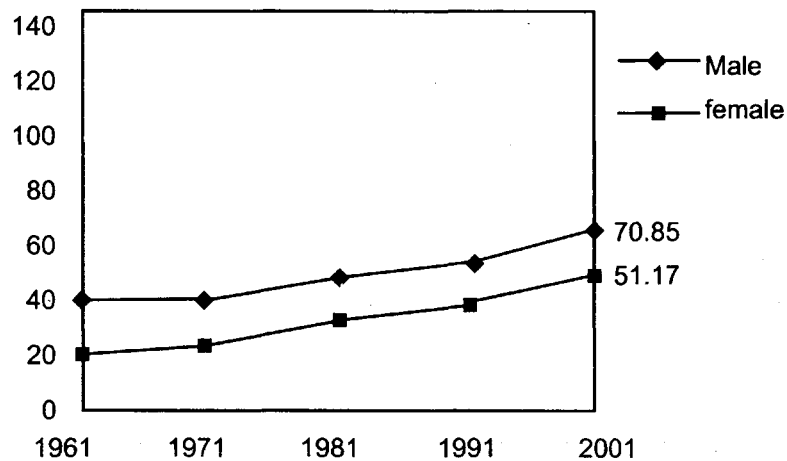
India, one of the most populous countries in the world made remarkable improvement in literacy. The literacy rate has increased from 18.33% (1951) to 65.38% (2001). The country has observed the highest decadal growth rate of 13.17% during 1991 and 2001. Male literacy has increased to 75.85% and female literacy rate increased to 54.16%. Kerala stood first among the states with 90.92% literacy, and Bihar observed the lowest literacy rate of 47.53%.

For the first time since independence there has been a decline in the absolute number of illiterates during 1991-2001. In the previous decades, there has been a continuous increase in the number of illiterates, despite the increase in literacy rates. But now for the first time the total number of illiterates has come down by 31.96 million. Thus, there are 300 million illiterates in India.

### 1.3 Literacy in Andhra Pradesh

Andhra Pradesh, the fifth largest state in India occupies 28th position among the states of India with a literacy rate of 61.11% (2001).

Over the last four decades, the literacy scenario of Andhra Pradesh has changed tremendously. The campaign approach of 1990s mobilized people from all walks of life. The multi-faceted communication and motivational strategy adopted has highlighted the vital link between literacy and living. As a result, a positive demand for literacy has emerged. Nearly 80 lakh learners were made literate during 1990-1997. Consequently, the literacy rate has increased to 61.11 per cent in 2001 as against 44.09 per cent in 1991. This 17% increase is the highest decadal growth recorded in the State. Especially the literacy among women has gone up substantially.



#### Increase in Literacy Rate from 1961 to 2001

Thus as per the census reports 2001, the percentage of literacy among 7+ age group is 61.11. The percentage of literacy among males and females are 70.85 and 51.17 respectively.

In spite of the improvement of literacy status there were 8 million illiterate adults in the state to be made literate. To cover this residual illiteracy, the Government of Andhra Pradesh has started a special literacy program named Akshara Sankranthi from October 2, 2000.

### **1.3.1 Akshara Sankranthi Program**

The Vision 2020 document developed by the Government of Andhra Pradesh has committed to ensure that the State will not just be literate but be a knowledge society capable of meeting the challenges of the 21st Century by providing educational opportunities to all. The State has set up a primary goal of increasing overall literacy levels from the current 61 percent to over 95 percent by 2005. Accordingly the timeframe for achieving total literacy has been revised and efforts to accelerate the pace have been made.

The State of Andhra Pradesh felt that a massive community based, sharply focused, consistent effort is required to achieve the targeted literacy rate in the timeframe of 5 years. Hence, a massive literacy campaign called Akshara Sankranthi was planned focusing the efforts on Self Help Groups (SHGs) and other common groups. Instead of making literacy as an entry point, Akshara Sankranthi envisaged literacy as a skill to be provided to the Self Help Group members to enable them to function better.

Primers were specially designed to meet the requirements of Self Help Groups and addressing issues specific to the members of Self Help Groups. And this special campaign was launched on October 2, 2000, with a period of three months (200 hours) for each phase of instruction. By June 2003, three phases of Akshara Sankranthi were completed. During these phases, nearly 64 lakh illiterates have acquired literacy skills through this program. And the current literacy rate is reported to be around 72%. It is planned to cover the residual illiterates in another three phases starting from June 2003.

To achieve this objective, specific strategies have been adopted by the State such as:

- Making Continuing Education Centres as the focal point
- Encouraging local administrative bodies and NGOs for adopting specific areas
- Involving volunteers and Self Help Groups
- Adopting intensive training
- Implementing well designed, systematic monitoring process
- Adopting systematic evaluation.

### **1.4 Need for Alternative Strategies and Approaches**

The State of Andhra Pradesh with its commitment and dedication is expected to achieve its objective of total literacy. But it would be much faster and easier, if the problem is tackled with a more integrated approach, using alternative strategies.

Illiteracy is a complex problem. Poverty and illiteracy are interlinked. One perpetuates the other. The problems like dropouts and relapses into illiteracy results in low achievement levels. Providing continuing education to all neo-literates for preventing 'relapse' is another major issue. Hence the problem has to be addressed on a long-term basis integrating multiple approaches and strategies. As the problem involves long term planning and implementation, it is also beneficial if the strategies involved are cost-effective.

It is useful to introduce alternative models, methods and new technological interventions in the implementation of the literacy programs. One such alternative technological intervention is the introduction of Computer and Information Technology, in literacy and continuing education programs.

### **1.5 Use of Computers for Literacy**

Computers are fast becoming enhancements to the teaching-learning transactions that are shaping our vision for the future. Computers are individual specific and provide opportunities for self-directedness and self-diagnosis. Being interactive they can deliver information with a program contingent upon a learner's response, and thus provide corrective and constructive feedback based on individual input.

Computers enable learners to receive information in varied sensory and conceptual modes through the use of colour, shapes, sounds, graphics and can be linked with a variety of electronic media such as audiotapes etc. Thus computers have excellent and varied uses in the process of education.

Computers can be used as a medium for delivering instruction involving subject matter, learners and teachers. Computers can support instruction as classroom aids to assist instruction in the accomplishment of educational objectives.

Computers can provide non-instructional support to assist the learning process outside the classroom. Computers can be used for evaluation purpose, for grading learners, for providing guidance and in report preparation. Connected to the Internet, it can also be used as a library.

As computers can cater to the needs of a large number of people and can be used repeatedly for a number of batches for a long time, their use reduces the expenditure of the program considerably. Thus, use of computers can be made highly cost effective.

The potential of computers in the learning process has been recognized worldwide, resulting in international initiatives for Computer Learning Aids. One such initiative is the Project undertaken by APPEAL in collaboration with Bangkok Information Programs and Services (PIPS). This project intends to use Information and Communication Technology (ICT) to encourage the growth of literate environments and creation of alternative strategies for literacy development in the Asia-Pacific region. India, Malaysia, Philippines and Thailand are partner countries in this project.

This international initiative led to the establishment of knowledge centers of M.S. Swaminathan Research Foundation (MSSRF), Chennai and Computer Based Functional Literacy Project of Tata Consultancy Services (TCS) etc. These are some of the interventions of Information Technology in the field of literacy in India.

### **1.5.1 The TCS Initiative**

With regard to literacy programs of Andhra Pradesh, the Computer Based Functional Literacy (CBFL) Program created by Tata Consultancy Services is worth mentioning. The CBFL Program of TCS aims to use technology to address the needs of illiterate adult populations in rural slum areas around major cities in India. The focus is primarily on reading skills and the purpose is to supplement the efforts of the National Literacy Mission of India and the State Literacy Mission Authority in realizing their goals.

Following the initial experiment in Beeramguda in Medak district of Andhra Pradesh, TCS extended the experiment to 80 centres in four districts of Andhra Pradesh (Medak, Visakhapatnam, Guntur and Krishna). TCS has expanded the program recently in Guntur where 415 computers have been installed.

CBFL is being carried out in Tamil Nadu and is planned to be expanded to Maharashtra, Uttar Pradesh, Madhya Pradesh and West Bengal.

However, this intervention is mainly focusing their efforts in the teaching – learning of literacy.

### **1.6 Hewlett Packard's Initiative**

Realising the need of the hour, Hewlett Packard (HP), has come forward to provide intervention of computer technology in literacy.

HP's Emerging Market Solutions (EMS) group is running one of its i-Community projects in Kuppam, Andhra Pradesh, India. One of the objectives of the i-Community project is to look at the area of Education and Technology intervention related to it.

Appreciating the Andhra Pradesh Government's objective of achieving Total Literacy by 2005, HP's Emerging Market Solutions Group along with HP Labs India (that carries out research in ICT related to Emerging Markets) has initiated work on a literacy testing solution and pilot testing of this in Kuppam. They have chosen to introduce ICT in the realm of Evaluation or Testing of literacy, as it was perceived as the most relevant and suitable means of intervention.

### **1.7 Evaluation in Adult Literacy**

Evaluation is the process of assessing an adult's progress and achievement of learning objectives. Successful evaluation not only indicates achievement but also reflects and provides information on the degree of instructional effectiveness.

The formative evaluation done in the process provides information about further learning needs of an adult. This feedback gives them the opportunity to correct themselves. The summative evaluation provides a means for improving future instruction and modifying future instructional plans.

Information collected from the evaluation also becomes the basis for assessing effectiveness of instruction. The purpose of instruction is to facilitate learning and the purpose of evaluation is to determine the extent of learning. Thus, evaluation provides guidance and direction to policy makers and implementing agencies. And especially for those who want to achieve specific targets, the database given by the evaluation is essential. A close look into the assessment practices in India also points out the need for intervention of computer technology in evaluation.

In India, the two national level data collection agencies like the Directorate of census and National Sample Survey Organization (NSSO) have been gathering statistics on literacy as a part of a larger demographic and socio-economic data gathering exercise. These have been generally accepted as the most authentic figures for assessing literacy and making intra-country comparisons. But the assessment made by the census is based on self-declaration of the respondent. And there is no objective measure to test the actual literacy status.

The NSSO has started to include a literacy test with reading, writing and numeracy in its National Survey only from the 1991 survey (47th round). The administration of the test is only to a sub-sample of persons who had declared themselves to be literate, who are in the age group of 15 years and above. The figures given by NSSO are also based on samples and not on the entire population.

After the initiation of Total Literacy Campaigns, a new approach was initiated regarding literacy assessment. In order to make an objective assessment of literacy acquisition and to have a uniform yardstick for assessment of the success of the campaign, principles were laid down on a more systematic basis in 1992 by a committee chaired by Prof. R. Dave, an eminent educationist and former Director of UNESCO, Institute of Education, Hamburg. These guidelines are now uniformly followed throughout the country in all external evaluations of the campaign.

But these evaluations are also based on samples. The Arun Ghosh Committee, which supplemented the earlier committee guidelines, recommended taking 5-10% of the population as the sample to obtain more stable results.

This is a difficult situation. Dr. I.V. Subba Rao points out that, while census figures are the most frequently quoted regarding the status of literacy, they certainly do not reflect the range of literacy skills acquired. It is only on the basis of self-declaration or by the endorsement of the family head. In contrast other surveys where the evaluating agencies assess the range of skills acquired by the learners to declare as literate as per the norms prescribed by NLM are based on the samples only. At present there is no integrated assessment mechanism, which makes possible the assessment of the entire population, and also which gives us a complete picture of literacy skills acquired. This is a gap in the current evaluation system.

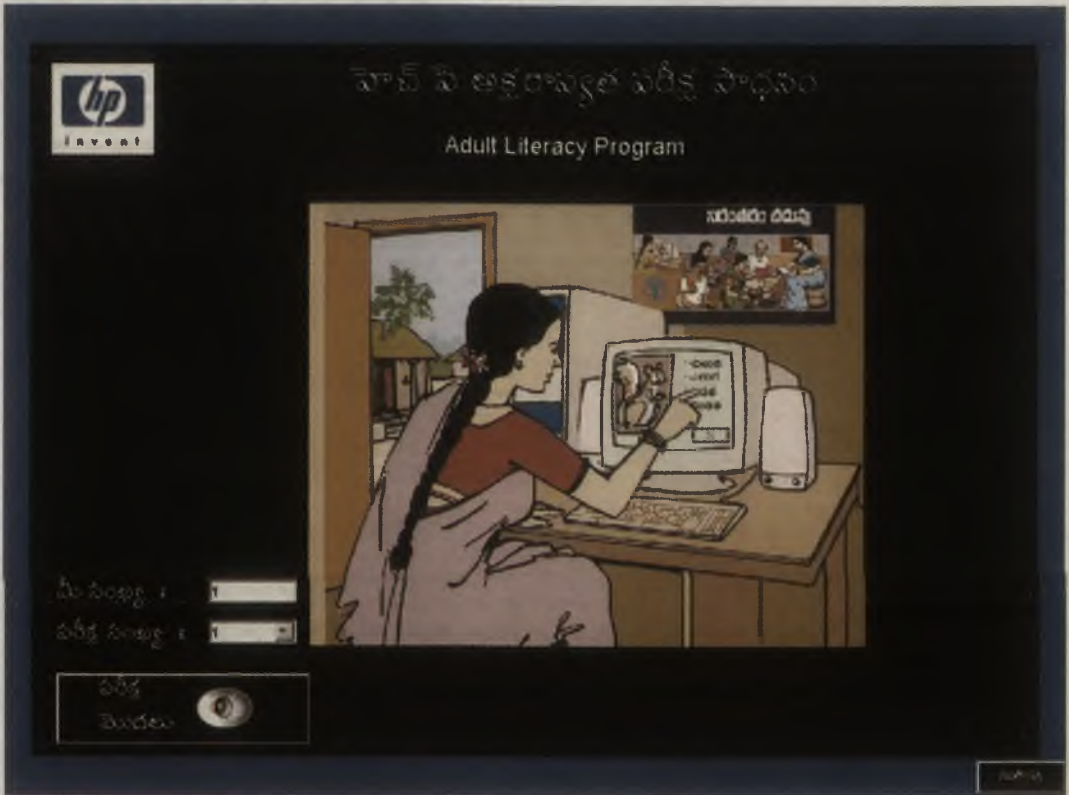
Computers could provide an answer to this. Assessment of total population becomes possible with computerized testing, with minimum of expenditure. Computers facilitate an objective, accurate, individualized assessment of literacy skills.

As such Literacy Testing has become one of the most relevant areas for the intervention of modern technology.

## Chapter 2: The HP Literacy Testing Solution

### 2.1 Introduction

The HP Literacy Testing Solution is an online evaluation tool for literacy skills. It is a simple user-friendly system that can be used by semi-literates.



The adult learner who comes for taking the test will be helped by the volunteer to register his/her name in the system and the system provides him/her with an identification number that can be used for future tests.

In the beginning the learner is given an introduction explaining the aims and objectives of the HP Literacy Testing Solution and encourages him to assess his literacy skills with the instrument.

Once the user chooses to start, the test begins. Of course, there is no need to use the 'mouse'. The Testing Solution is user-friendly. It is endowed with touch screen technology. The learner can interact with the system just by touching the screen.



There are 30 multiple-choice questions to be answered by the learner. Each question is presented on a colourful separate full screen. For each question, the text of the question appears on the top of the screen. And a voice over explains the question in detail and tells the learner what he is supposed to do. The learner has to listen to this voice carefully, read the question and try to select the correct answer from the multiple options given below the question on the screen. He can indicate his choice by touching the option on the screen.

If he is not able to understand the question, he can listen to it once again. For this he has to simply touch the audio button beside the question box. If his selected option happened to be the correct one, the voice over gives him a word of appreciation. If the answer chosen by the learner is wrong, the voice over tells him so and encourages him to try again. Sometimes depending on the context, it also gives clues about where he went wrong.

When the learner finishes the maximum number of attempts the voice over gives him the feedback and reveals the answer also. Then it goes to the next question.

After completing each question, the marks obtained for that question are added to the total marks and appear at the bottom of the screen. The marks for a question will be reduced in proportion to the wrong choices made by the learner.

If the learner wants to listen to the words / sentences / numbers given in the options, he can do so. Besides each answer option, an audio button is provided. By touching the concerned buttons, he can listen to the option of his choice. However, this is not enabled for questions aimed at measuring the 'Reading abilities' where the learner is expected to read the options.

When the learner completes all the 30 questions scheduled, the test is concluded and the total marks scored appear on the screen. The voice over appreciates his efforts, congratulates him and concludes by encouraging him to do better in the next attempt of the test.

Thus the HP Literacy Testing Solution is a multimedia, interactive device suitable for use by an adult neo-literate learner.

## **2.2 Academic Design of the Content**

The HP Literacy Testing Solution is an achievement Test Battery developed to assess the literacy skills attained by the learners in terms of three competencies namely: reading, writing and numeracy.

While developing the test, the definition of 'functional literacy' and the levels of literacy advocated by National Literacy Mission, Government of India were kept in mind. The evaluation guidelines recommended by R.H. Dave Committee, National Literacy Mission, Government of India were adopted.

According to the National Literacy Mission, Government of India. Functional Literacy implies:

- Achieving self-reliance in literacy and numeracy.
- Becoming aware of the causes of deprivation and moving towards amelioration of oppressive conditions through organization and participation in the process of development.
- Acquisition of skills to improve the economic status and gener pilot study of hp literacy testing solution

The level of norms for the successful completion of the basic literacy course advocated by the National Literacy Mission are:

"Level-III: Ability to

- Read and write words and sentences, having any of the letters, vowel signs and conjunct letters.
- Comprehend a simple and small unknown passage of text, newspaper headings, road signs etc.
- Read and write numbers up to 1000
- Do sums and compute simple problems involving multiplications and divisions within 1000
- Apply skills of reading, writing and numeracy in day-to-day activities i.e., read letters, sign boards, posters, write letters, fill up various useful forms, keeping household accounts etc."

However, as suggested by R.H. Dave Committee in assessing the literacy skills, only reading, writing and numeracy competencies were considered assuming that awareness and functionality are already taken care of in the process of primer teaching. The weightages of the three components are given in the ratio of 40:30:30 for reading, writing and numeracy.

At present in the HP Literacy Testing Solution, the technology is not available, to directly assess the actual writing skills of the learners. As such an attempt is made to assess the writing skills in an indirect and derivative manner.

The derivative writing skills are developed keeping in view the relation between reading and writing and the implications of writing skill in higher mental activities involving literacy skills.

Reading is a prerequisite for writing. Unless one learns how to read, he cannot write. However, all the learners who can read may not be able to write. To be able to write, the learner should be thorough with the forms and shapes of different letters. He should be able to discriminate between similar looking letters and signs. In other words, he should be thorough with spellings.

And to be able to use writing skills in day-to-day life successfully, one may have to be aware of formalities required for writing properly structured sentences. Finally, it is assumed that unless one is confident in writing, it is not possible to use literacy in creative activities such as completing word puzzles and letter

puzzles and word building.

Hence, while developing test items for derivative writing skills, emphasis was laid on spellings, use of grammar and ability to complete word building and completion of puzzles etc.

To complete the tests on the HP Literacy Testing Solution, a learner has to answer a series of 30 questions. The first ten questions relate to reading skills, the second ten questions assess writing skills and the last ten questions relate to numeracy skills.

Thus the HP Literacy Testing Solution is a battery of three sub-tests for writing, reading and numeracy arranged in sequence. Each sub-test is intended to assess a specific skill. The questions are arranged in order of increasing difficulty. In each sub-test, the first three questions are of 'easy' type. The 4th, 5th, 6th and 7th questions reflect 'medium' difficulty level and the last three questions namely 8th, 9th and 10th are designed to be 'hard'. In each level of difficulty also, an attempt is made to arrange the tasks in the order of increasing difficulty. Thus it can be said that in each sub-test of 10 questions, the difficulty level gradually increases from questions one to ten.

All the five items in the block are developed in such a way that they are not directly based on lessons incorporated in any primer. In other words, the items in the battery are not primer-specific. Further, the HP Literacy Testing Solutions contains 30 blocks of 5 questions each of equal difficulty level. Even if the same person takes the test immediately after completing the first round the questions he has to answer will be different.

Thus, the in-built randomness incorporated in the program gives scope for innumerable number of parallel forms of question papers. This kind of arrangement is made to avoid mere memory based answering by those who talk to others who have taken the test earlier.

### **2.3 Gradation of Abilities Tested in Different Competencies**

The competencies tested in each of questions in each of the sub-tests in the main test are given below:

#### **2.3.1 Reading**

1. Reading simple words with vowels, consonants and vowel signs (with 'picture' as cue).
2. Reading simple words composed of vowels, consonants, and vowel signs (with actual 'word' as cue).
3. Reading simple words composed of vowels, consonants, vowel signs and consonant signs (with audio as cue).
4. Reading and comprehending phrases.
5. Reading and comprehending small sentences.

6. Reading a small sentence and filling the blanks with a correct word to make it meaningful.
7. Reading a part of a sentence and identifying the other part to complete it meaningfully.
8. Transforming visual experience into linguistic expression i.e., looking at an action-oriented picture and identifying the sentence that explains the activity depicted in the picture.
9. Reading and comprehending a small passage of about three sentences and use that comprehension in choosing a correct sentence.
10. Reading and comprehending a passage of 5 or 6 simple sentences and answering a question based on it.

### **2.3.2. Writing**

1. Identifying the correct spelling of small words composed of vowels and consonants.
2. Identifying correct spelling of small words composed of vowels, consonants and vowel signs.
3. Identifying the specified vowel sign by discriminating between different signs.
4. Identifying wrongly spelt words composed of vowels, consonants, maha pranas (rare consonants) and vowel signs – the emphasis is on maha pranas.
5. Identifying the correct form in which a consonant sign is to be written.
6. Forming words with given letters (vowels, consonants and vowel signs)
7. Identifying the correct form of writing a sentence, the emphasis being on the placement of vibhakti pratyayas (prepositions)
8. Completing a letter puzzle – emphasis being on building words involving conjunct letters.
9. Completing a crossword puzzle involving two phrases.
10. Rearranging the given sentences in sequential (logical) order.

### **2.3.3. Numeracy**

1. Identification of a missing number, in the sequence given.
2. Identifying the correct sequence of the numbers given.
3. Adding the number of objects in two sets of concrete objects.
4. Functional addition
5. Functional addition involving two digit numbers.
6. Two digit functional subtraction without borrowing.
7. Two/Three digit functional subtraction with borrowing.
8. Multiplication involving single digit numbers.

9. Functional multiplication requiring multiplication of a two-digit number with a one-digit number.

10. Functional division of a 2 or 3 digit number by a one-digit number.

For each question of the sub-test, specific topics and tasks are identified as basis for developing question items. These are given in Appendix-1.

#### 2.4 Breakup of Marks

The breakup of marks in a test is as follows:

Total Marks for the 3 components = 100

Total marks for reading questions = 40

Total marks for writing questions = 30

Total marks for numeracy questions = 30

Total = 100

The break-up of marks for questions among components is as follows (these can be altered but are currently set up as given below):

Reading		Writing		Numeracy	
Question No.	Marks	Question No.	Marks	Question No.	Marks
1	2	1	2	1	1
2	2	2	2	2	2
3	3	3	2	3	2
4	3	4	3	4	3
5	4	5	3	5	3
6	4	6	3	6	3
7	5	7	3	7	3
8	5	8	4	8	4
9	6	9	4	9	4
10	6	10	4	10	5
	<b>40</b>		<b>30</b>		<b>30</b>

#### 2.5 Example Questions

The questions are designed keeping in view the social context and the psychological needs of the adult learners. As such vocabulary familiar to adult learners and which is used in their daily transactions were selected for inclusion

in the test. And words understood by the learners of all the regions of Andhra Pradesh are selected (leaving out words that are specific to some dialects).

The questions are built around issues and social situations familiar to average rural adult learners of Andhra Pradesh.

Effort was put in to design questions that are intrinsically motivating to the learners. Dull and routine type of questions may demotivate the learners towards the assessment. As such questions are designed in such a way that they are interesting, thought provoking and have entertainment value for the learners.

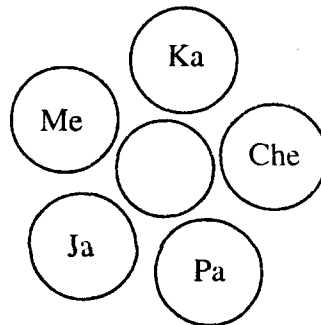
Some of the questions given in writing competency illustrate this point well.

### 2.5.1 Example – 1

A question from Set 8 in writing competency is a 'letter puzzle'. The learner is shown a flower pattern with letters on its 5 petals. The centre space in the flower is empty. If a specific letter is inserted in the centre space, 5 meaningful words can be formed. What is that letter? The learner is given 3 options from which one is to be selected.

Alternative answers

1. Nna
2. Ttu
3. Ppa



The correct answer is the second option 'Ttu'. If 'Ttu' is inserted in the center space of the flower the following 5 meaningful words can be formed.

- (1) Ka'ttu' (Bandage)
- (2) Che'ttu' (Tree)
- (3) Pa'ttu' (Silk)
- (4) Ja'ttu' (Group)
- (5) Me'ttu' (Step)

### 2.5.2. Example No.2

A question from set 6 in writing competency is a word building exercise.

Here the learner is given a crossword puzzle of two words. One word goes across the other word. At the intersection point lie an empty space that is to be filled by the learner. The learner is given 3 options from which the learner has to select the correct letter.

			Ga	
			Ddi	
			Va	
Che	Ru	ku		Kka

### Answer Options

1. Mu
2. Gu
3. Ku

The correct answer is 'Mu'. By inserting 'Mu' in the empty space Cherukumukka (piece of sugar cane) can be built horizontally and Gaddivamu (Heap of Grass) can be formed vertically.

Thus questions are designed as to provoke and sustain the interest of learners in taking the test successfully.

### 2.6 Limitations of the Testing Solution

One limitation of the HP Literacy Testing Solution is the inability to assess the actual writing competency of the learner directly. The derivative writing skills attempted in the test may be considered as effective predictors of writing skills. However, they are only approximations of writing skills. And assessment of direct writing skills cannot be equated with assessing writing skills in a derivative manner.

## Chapter 3: Pilot Study

### 3.1 Introduction

HP planned to field test the HP Literacy Testing Solution in collaboration with

- The Directorate of Adult Education, Andhra Pradesh
- The State Resource Centre, Hyderabad and
- The Zilla Saksharatha Samithi, Chittoor District, Andhra Pradesh.

HP exhibited a version of the Testing Solution during the Kuppam i-Community Solutions Week (March 8th to 15th, 2003) at Kuppam Mandal Secretariat as one of their solutions for different wings of e-Governance at Kuppam. The Hon'ble Chief Minister of Andhra Pradesh Sri Nara Chandrababu Naidu inaugurated the Testing Solution, appreciated the effort and also suggested to field test the instrument on a large sample population.



*Sri N. Chandrababu Naidu, Hon'ble Chief Minister of Andhra Pradesh on the dais alongwith Ms. Debra L. Dunn (Senior Vice-President Corporate Affairs), Mr. Richard H (Dick) Lampman (Senior Vice-President of Research and Director of HP Labs) (on the left) and Mr. Anand Tawker (Director, India i-Community Project) (on the right) on March 8th 2003*



HP initiated detailed planning of the pilot study of the Testing Solution. It was decided to conduct the Pilot Study in Kuppam constituency of Chittoor District, Andhra Pradesh.

### 3.2 Literacy Scenario of Chittoor District

As per the 2001 census, among the 23 districts of Andhra Pradesh 7 districts have literacy rates beyond the national average of 65.38%. Chittoor district is one among them, the other districts being Hyderabad, West Godavari, Krishna, Rangareddy, Nellore and East Godavari.

Chittoor district stands in fourth position among the districts of Andhra Pradesh. The literacy rate of Chittoor district is 67.46%. The literacy rate among men is 78.29% and among females it is 56.48%. Among the 66 mandals, 31 mandals are above the national average and 8 mandals are in between the national average and the state average. And there are 27 mandals below the state average. The mandal having highest literacy rate is Tirupati urban (82.81%) and Gudipalli (part of the Kuppam Constituency where the pilot was carried out) is the mandal exhibiting lowest literacy rate (45.35%) in Chittoor district.

Kuppam constituency includes five mandals namely:

- Kuppam
- Ramakuppam
- Gudipalli
- Santhipuram and
- V. Kota.

The literacy rates of all these mandals fall below the state average as per the 2001 census. The literacy rates of these mandals are given in Table 3.1.

Mandal	Literacy Rates		
	Total	Male	Female
V. Kota	60.22%	71.96%	48.33%
Rama Kuppam	54.41%	66.89%	41.38%
Kuppam	53.36%	64.05%	42.43%
Santhipuram	50.29%	63.23%	37.33%
Gudipalli	45.35%	59.85%	30.82%

**Table 3.1: Literacy Rates in Chittoor**

### **3.3 Planning for the Pilot Study**

To facilitate the systematic implementation of the pilot study and to ensure the cooperation and collaboration of different agencies involved, meetings were organized by HP.

During the meeting held on May 12, 2003 in the premises of Directorate of Adult Education, the proposed pilot study of the HP Literacy Testing Solution was explained and the Solution was demonstrated to Dr. I.V.Subba Rao, IAS. (Principal Secretary, Education, A.P.), Smt. Poonam Malakondaiah, IAS (the then Director, Adult Education, A.P.) and Dr. Manmohan Singh, IAS (Commissioner, School Education) who provided their valuable suggestions.

On June 9th 2003, another meeting was organised at Kuppam, with Mr. A. Sharat, Project Officer, Kuppam Area Development Authority, Mr. K. Ramachandra Reddy, Deputy Director, Zilla Saksharatha Samithi, Chittoor, Prof. S. Padmanabhaiah, Director, State Resource Centre and Dr. K.S.R. Anjaneyulu, HP Labs India. As a result of the discussions held, a detailed plan of action was developed. It was decided to conduct the pilot study in Kuppam constituency of Chittoor district of Andhra Pradesh. The five mandals of Kuppam constituency namely Kuppam, Ramakuppam, Santhipuram, Gudipalli and V.Kota were to be included. The test should be administered starting from 25th June, 2003 for one month duration.

### **3.4 Objectives of the Study**

The main objectives of the study were to:

1. Validate the Testing Solution by comparing the scores on HP Testing Solution against the scores obtained by learners on a manually completed test.
2. Find out the impact of successive administrations of the HP Testing Solution on the improvement of literacy skills.
3. Find out the problems / issues in the areas of content, presentation and software and administration of the HP Testing Solution that would require further improvement for large scale deployment of the Testing Solution.

### **3.5 Population Sample**

It was planned to administer the test on 500 learners, 100 learners from each mandal of Kuppam constituency. The learners who have completed basic literacy program were included in the sample (even if they have not qualified in the final evaluation). However, dropouts were not considered.

### **3.6 Tools Used**

1. HP Literacy Testing Solution (explained in detail in Chapter 2)
2. A Paper-Pencil Literacy Evaluation Test.
3. Bathukubata, a supplementary reader to sustain the interest of learners and revive their literacy skills.

4.A semi-structured interview to assess the views and experiences of learners.

### **3.6.1 Paper-Pencil Literacy Evaluation Test**

A pencil-paper Literacy Evaluation Test was designed to assess the literacy competencies of Reading, Writing and Numeracy. The literacy norms and the definition of functional literacy and evaluation guidelines advocated by the Prof. Dave Committee were adopted in designing this Test. The learners were expected to complete this test in the normal paper-pencil mode.

### **3.6.2 'Bathukubata' Supplementary Reader**

For a majority of the neo-literates who complete basic literacy, the tendency is to lose interest in literacy and lose the literacy skills learnt.

HP thought that it is better to sustain the interest of participants of the pilot study by providing a supplementary reader to go through, during the one-month period of the Pilot Study.

Hence, a supplementary reader 'Bathukubata' was developed with 8 lessons on different contents of awareness which were not included in their normal primer such as:

1. Marriage Age
2. Personal Hygiene
3. Nutritious Food
4. AIDS
5. Child Labour
6. Selecting Income Generation Activities
7. Agriculture
8. Continuing Education

IPCL (Improved Pace and Content of Learning) Guidelines prescribed by National Literacy Mission, Government of India were followed in designing this supplementary reader.

### **3.6.3 Semi-Structured Interview**

To assess the views and experiences of learners with the HP Literacy Testing Solution, a semi-structured interview was designed to include some leading questions on issues like utility and effectiveness of the HP Literacy Testing Solution and Bathukubata supplementary reader, advantages and problems experienced by learners while taking the online test; and suggestions for further improvements etc.

### **3.7 Procedure**

#### **3.7.1. Identification of learners**

The Deputy Director of Adult Education, Chittoor Sri K. Ramachandra Reddy suggested that the Mandal Literacy Officers (MLOs) of Kuppam constituency identify 100 learners each in their respective mandals and prepare the list of volunteers with the help of the Preraks and Nodal Preraks concerned.

#### **3.7.2. Orientation Training Program for Field Personnel**

An orientation program was organized by the State Resource Centre faculty at the Kuppam Area Development Authority (KADA) office, Tumsi, Kuppam on 23rd June 2003 to literacy field functionaries of five mandals of Kuppam constituency on the implementation of the pilot study.

65 field functionaries including Mandal Literacy Organisers (MLOs), Preraks, Nodal Preraks were given orientation on the objectives, and implementation procedure of the study.

The representatives of HP demonstrated the HP Literacy Testing Solution to the field functionaries, and trained five coordinators specially identified for the purpose of maintaining and operating the systems.

#### **3.7.3. Deployment of Computer Systems**

Computer systems equipped with HP Literacy Testing Solution were deployed in the mandal offices of Kuppam, Ramakuppam, Gudipalli, Santhipuram and V.Kota on 24th June, 2003.

#### **3.7.4. Implementation of Online Testing**

The online testing was formally inaugurated on 25th June in all the five mandals. The concerned local elected representatives of Panchayat Raj graced this occasion and expressed their cooperation to this study. Thus started the one-month study during which each learner was supposed to take the test 3 times.

The study period was divided into three phases, 10 days for each phase. And each learner was scheduled to take the test once in each phase.

Every day the testing was scheduled from 8 am to 8 pm. Ten learners were scheduled to be tested every day, with five members coming in the morning and five members in the afternoon. Thus in ten days, it was expected to complete 100 learners.

The lists of names of learners, and Preraks (who accompany them to the centre from their villages) scheduled for each day were prepared for each phase of testing. It was arranged that Preraks would read out the lessons of Bathukubata supplementary reader to the learners at their concerned Continuing Education Centres.

- The first phase of testing was done from 25th June to 4th July for 10 days, as per the schedule drawn.

- The second phase of testing was done from 5th to 14th July and the learners took the test a second time.
- The third phase was carried out from 15th to 26th July during which learners took the test a third time.

The learner interviews and paper-pencil evaluation test were administered during the second and third phases of the study respectively.

Throughout the testing period, the learners and Preraks were provided transport allowance to come to the testing centers from their villages. Working lunch was also provided to the learners and Preraks as a token of appreciation for their efforts.

### **3.8 Project Monitoring**

The implementation of the testing process was continuously monitored throughout the period, by SRC and HP teams.

The SRC team including Prof. S. Padmanabhaiah, Dr. B. Nagalakshmi, Dr. B. Krishna Reddy, Mrs. K. Katyayani and G. Bhasker Reddy visited and monitored the testing process and solved non-technical problems encountered during the implementation of the project.

And the team from HP visited the centres during the three phases and attended to technical problems encountered during the study period.

The Deputy Director of Adult Education, Chittoor district Sri K. Ramachandra Reddy and Sri A. Sarath, Project Officer, KADA also actively participated in the monitoring of the project with their teams.

## Chapter 4: Analysis of Pilot Study Data

### 4.1 Introduction

The pilot study was organized from 25th June to 26th July, 2003, with five computer systems installed at five mandal offices of Kuppam, Ramakuppam, Santhipuram, V. Kota and Gudipalli. The identified learners came to these centers to take the test thrice on the systems as scheduled. This chapter analyzes the test data obtained from the pilot study. The participation of learners in this pilot study is presented in the following table.

Mandals	Phase-I (Test-1)			Phase-II (Test-1)			Phase-III (Test-1)			Total Administrations		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Kuppam	54	43	97	43	37	80	29	25	54	126	105	231
Ramakuppam	54	23	77	51	16	67	28	10	38	133	49	182
Santhipuram	44	41	85	39	40	79	25	20	45	108	101	209
V. Kota	40	32	72	39	28	67	30	19	49	109	79	188
Gudipalli	29	43	72	23	39	62	11	24	35	63	106	169
	221	182	403	195	160	355	123	98	221	539	440	979

**Table 4.1: Learners Participation in Pilot Study**

As indicated in Table 4.1, during the pilot study of one month, a total of 979 tests were administered to the learners (Male=539, Female=440).

During Phase 1, 403 learners took the test (Male = 221, Female = 182). Though every effort was made, due to practical problems in the field, all 500 learners could not participate in the test as expected. Thus 403 learners took Test-1.

During the second phase, some more dropped out due to rains and subsequent initiation of farming activities in the region. Hence as indicated by Table 4.1, Test-2 was administered to 355 learners (Male = 195, Female=160).

During the third phase, the situation worsened due to the 'Adikruthika' festival, and the accompanying Fairs, Worship and Rural Marketing associated with it. Thus, in the third phase only 221 learners returned to take Test-3 (Male = 123, Female = 98).

Among the mandals, the maximum number of Test-administrations took place in Kuppam (231) mandal followed by Santhipuram (209). Gudipalli recorded the minimum administration of Tests (169).

In Phase 1 the maximum number of learners took the test at Kuppam (97) followed by Santhipuram (85). During the second phase the same trend was observed. In the third phase, Kuppam was attended by maximum number of learners (54) followed by V. Kota (49).

In all the mandals male learners participated a little more than females except in Gudipalli. In Gudipalli mandal, in all the phases females attended more than males.

The data thus obtained was statistically analyzed keeping in view the following objectives:

- To find out the general performance profile of the learners who took the online Testing – Test-wise, Mandal-wise, Competency-wise and sex-wise.
- To find out the validity of HP Literacy Testing Solution by correlating learners performance on the Testing Solution with their performance on a Paper-pencil Evaluation Test.
- To find out the reliability of the Testing Solution by correlating the performance of learners in successive parallel forms of tests i.e. Test-1, Test-2 and Test-3.
- To find the improvement in the performance of learners from Test-1 to Test-2 and Test-3 by calculating the differences in mean scores obtained in Test-1, Test-2 and Test-3.

The findings are presented in four sections in this chapter:

- General Profile
- Performance on HP Testing Solution Vs performance on Paper-Pencil Evaluation Test
- Performance scores on successive parallel forms of Tests
- Improvement of performance in successive tests.

#### 4.2 General Profile of Learners Performance

Sl. No.	Mandal	Average Scores			Overall average for total tests
		Test-1	Test-2	Test-3	
1.	Gudipalli	87.00 (N=72)	88.00 (N=62)	91.31 (N=35)	88.27 (N=169)
2.	Kuppam	93.67 (N=97)	94.51 (N=80)	94.46 (N=54)	94.14 (N=231)
3.	Ramakuppam	90.96 (N=77)	91.50 (N=67)	91.21 (N=38)	91.21 (N=182)
4.	Shanthipuram	94.95 (N=85)	95.60 (N=79)	97.40 (N=45)	95.72 (N=209)
5.	V.Kota	78.38 (N=72)	83.80 (N=67)	89.77 (N=49)	89.99 (N=188)
	Overall averages	89.49 (N=403)	90.98 (N=355)	92.96 (N=221)	90.80 (N=979)

### Over all average for total number of testings

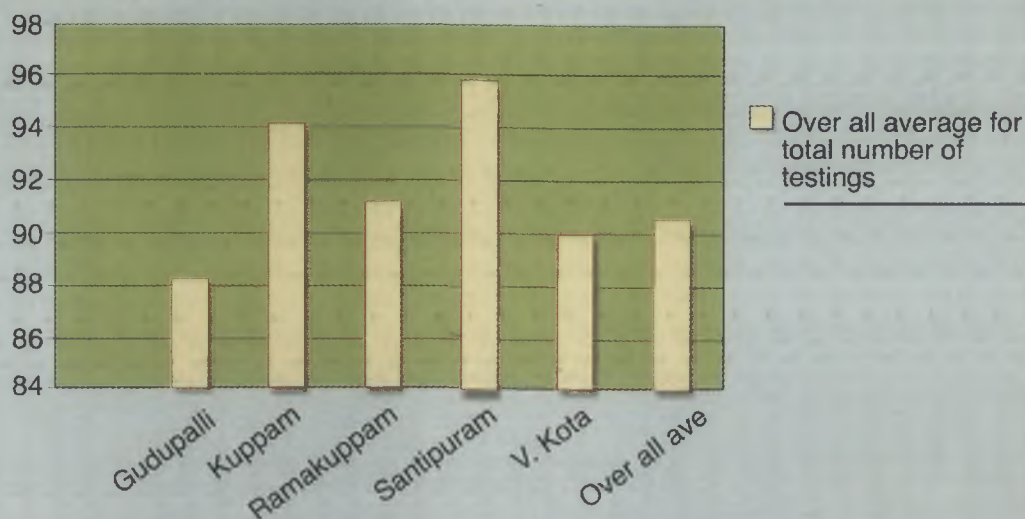


Table 4.2: Average Scores of Learners Mandal-wise

As depicted in Table-4.2, the overall average score obtained for 979 administrations has come to 90.80. Among the Mandals the maximum score of 95.72 was obtained by learners of Santhipuram Mandal whereas the minimum score of 88.27 was obtained by learners of Gudipalli.

The overall mean scores obtained in three consecutive tests show an increasing trend. The mean score that was 89.49 in Test-1 has slightly increased to 90.98 in Test-2 and further increased to 92.96 in Test-3.

This increasing trend was observed among mandals also. Gudipalli, Santhipuram, V.Kota have shown continuous improvements. But in Kuppam and Ramakuppam there was a slight decrease in Test-3.

Among the five mandals Santhipuram scored highest in all the 3 consecutive tests. And V. Kota scored the lowest in all the three tests.

In Test-1, the scores ranged from 78.38 (V.Kota) to 94.95 (Santhipuram). In Test-2, the scores ranged in between 83.80 (V. Kota) to 95.60 (Santhipuram). In Test-3, scores ranged from 89.77 (V.Kota) to 97.40 (Santhipuram).



Test	Average Scores		
	Reading	Writing	Numeracy
Test-1 (N=403)	34.92 (87.3%)	26.11 (87.00%)	28.45 (94.83%)
Test-2 (N=355)	35.44 (88.6%)	26.67 (88.9%)	29.00 (96.6%)
Test-3 (N=221)	35.89 (89.72%)	27.82 (92.73%)	29.25 (97.5%)
Overall Average	35.41 (88.52%)	26.86 (89.53%)	28.90 (96.33%)

Table 4.3: Performance of Learners Competency-wise

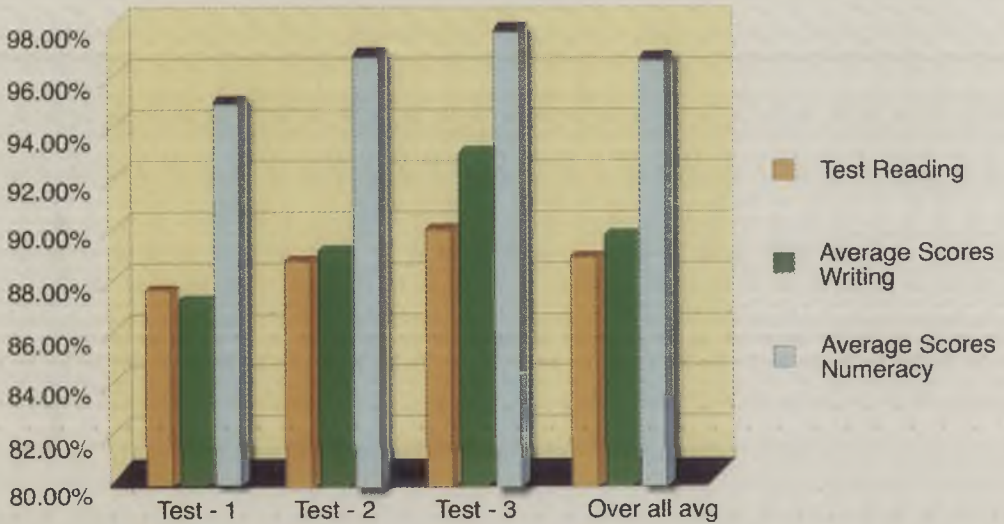


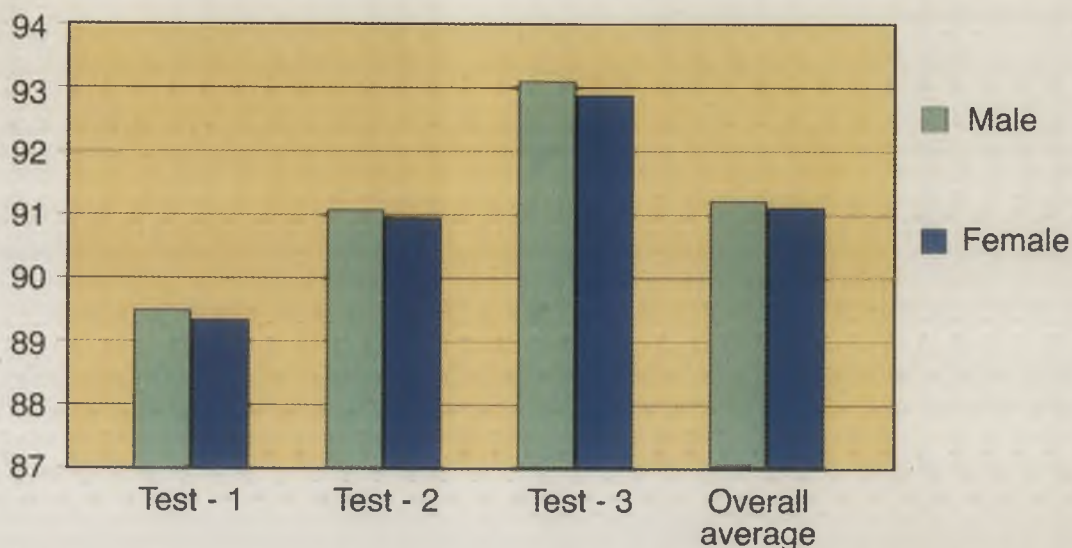
Table 4.3 shows that the learners participated in the HP Testing Solution scored better in numeracy than in the other two competencies. (As competencies have differential weightages, percentages are calculated).

In the overall average of all three tests, learners scored 96.33% in numeracy competency, 89.53% in writing competency and 88.52% in reading competency.

In the first two tests, learners scored almost equal in reading and writing competencies. But it is interesting to note that in the third test, learners improved their performance more in writing competency than in Reading.

Test	Average Scores	
	Male	Female
Test-1	89.58 (N=221)	89.49 (N=182)
Test-2	91.03 (N=195)	90.92 (N=160)
Test-3	93.06 (N=123)	92.93 (N=098)
Overall Average	91.22	91.11

Table 4.4: Performance of Learners Sex-wise



As shown in Table 4.4, on the overall average male and female learners performed approximately at the same level on HP Literacy Testing Solution. In Test-1 also male and female learners scored almost equal mean scores. But in Test-2 and Test-3, males performed slightly better than their female counterparts.

#### 4.3 Performance on HP Testing Solution compared with Performance on Written Test.

To find out the validity of HP Literacy Testing Solution, the scores obtained by learners on Computer Testing were correlated with scores obtained on the Paper-Pencil Test written by them by employing Pearson's coefficient of Product – Moment correlations technique. For these and most of the following results we use the 221 people who attended all 3 tests from the sample population.

Test	For Total Scores	For Competencies		
		Reading	Writing	Numeracy
Test-1	0.384**	0.194**	0.230**	0.271**
Test-2	0.399**	0.157*	0.276**	0.301**
Test-3	0.368**	0.156*	0.111 (NS)	0.234**

Table 4.5: Pearson Product – Moment Correlation coefficients of scores on HP Testing vs scores on Paper-Pencil Test (N=221)

0-12562  
112-205

The correlation coefficients presented in Table 4.5 show that scores on the HP Literacy Testing correlated positively and significantly with the scores obtained on Paper-Pencil Test for all the three Tests conducted. The correlation coefficient obtained between Test-1 total scores and written Test total scores is 0.384 which is significant at 0.01 level. Similarly, Test-2 total scores and written Test total scores, Test-3 total scores and written Test total scores are also correlated significantly beyond 0.01 level.

The correlation coefficients found for scores of different competencies of literacy are also significantly correlated either at 0.05 level or at 0.01 level except in one case i.e., the writing competency scores of third test vs paper-pencil test.

Test	Male (N=123)	Female (F=98)
Test-1	0.392**	0.384**
Test-2	0.399**	0.400**
Test-3	0.370**	0.368**

**Table 4.6: Correlation Coefficients of Scores on HP Tests vs Scores on Written Test - Sex-wise**

For male and female learners also the scores on HP Tests correlated significantly beyond 0.01 level with those scores obtained on the written test. This is observed in all the three tests namely Test-1, Test-2 and Test-3.

For Total Scores	For Competencies		
	Reading	Writing	Numeracy
0.506**	0.230**	0.295	0.363**

**Table 4.7: Correlation Coefficients of Aggregate average scores on 3 HP Tests vs Scores on Written Test (N=221)**

The correlation coefficients calculated between the aggregate average scores of learners for 3 computer tests and written test scores are found to be much more significant.

Therefore, it is concluded that the HP Literacy Testing Solution is valid and it is as good as the paper-pencil tests as a tool of evaluation leaving the other aspects such as administration, scoring results, publication etc. aside

#### **4.4 Performance of Learners in Consecutive Tests**

Correlation coefficients were calculated for the scores obtained on consecutive tests on HP Literacy Testing Solution, to find out it's reliability.

Test-1 vs Test-2	Test-2 vs Test-3	Test-1 vs Test-3
0.572**	0.402**	0.361**

Table 4.8: Performance in Consecutive Tests (Product-Moment Correlations) (N=221)

As indicated by Table 4.8, the scores obtained by learners on HP Testing Solution in different phases correlated significantly beyond 0.01 level. The correlations obtained between scores of Test-1 and Test-2, between Test-2 and Test-3, and between Test-1 and Test-3 are significant, indicating that the HP Testing Solution is a reliable instrument for assessing literacy skills of neo-literates. Further, it is the testimony of innumerable number of question papers that are created in the system randomly selecting the 30 items from 30 blocks of 5 items each, are equivalent forms of the testing tool.

#### 4.5 Improvement of Performance over Consecutive Tests

One of the objectives of the Pilot Study was to find out whether consecutive tests on the HP Literacy Testing Solution results in the improvement of literacy skills of learners.

To find out this, the mean scores of learners are compared over consecutive tests of the HP Testing Solution. Critical ratios are calculated to find out the differences in the mean scores of Test-1, Test-2 and Test-3.

Test	Mean	SD	Mean Difference	CR
Test-1	89.49	11.6	1.47	1.38 (NS)
Test-2	90.96	10.73		

Table 4.9: Significance of difference between Means of Test-1 and Test-2 (N=221)

Test	Mean	SD	Mean Difference	CR
Test-2	90.96	10.73	2.00	2.27*
Test-3	92.96	7.54		

Table 4.10: Significance of differences between Means of Test-2 and Test-3 (N=221)

Test	Mean	SD	Mean Difference	CR
Test-1	89.49	11.6	3.47	3.73**
Test-3	92.96	7.54		

Table 4.11: Significance of differences between Means of Test-1 and Test-3 (N=221)

The findings in Tables 4.9, 4.10, and 4.11 suggest that there is a gradual improvement of performance from Test-1 to Test-2, and from Test-2 to Test-3. However, the improvement from Test-1 to Test-2 is not significant, but the improvement from Test-2 to Test-3 is significant at 0.5 level and the improvement from Test-1 to Test-3 is significant at 0.01 level.

Test	Mean	SD	Mean	CR
Test-1	34.70	6.35	0.26	0.44 (NS)
Test-2	34.96	5.95		
Test-2	34.96	5.95	0.93	1.78 (NS)
Test-3	35.89	5.00		
Test-1	34.70	6.35	1.19	2.20**
Test-3	35.89	5.00		

Table 4.12: Significance of differences between Means of Test-1, Test-2, Test-3 (For Reading Competency) (N=221)

Test	Mean	SD	Mean Difference	CR
Test-1	25.88	4.73	0.36	0.80 (NS)
Test-2	26.24	4.82		
Test-2	26.24	4.82	1.58	4.15**
Test-3	27.82	3.14		
Test-1	25.88	4.73	1.94	5.1**
Test-3	27.82	3.14		

Table 4.13: Significance of differences between Means of Test-1, Test-2, Test-3 (For Writing Competency) (N=221)

Test	Mean	SD	Mean Difference	CR
Test-1	28.33	3.43	0.32	1.1 (NS)
Test-2	28.65	2.83		
Test-2	28.65	2.83	0.60	2.6**
Test-3	29.25	2.07		
Test-1	28.33	3.43	0.92	3.53**
Test-3	29.25	2.07		

Table 4.14: Significance of differences between Means of Test-1, Test-2, Test-3 (For Numeracy Competency) (N=221)

The results tabulated in Tables 4.12, 4.13, and 4.14 indicate the improvement of HP Test scores in different competencies of Reading, Writing and Numeracy

respectively from Test-1 to Test-2, from Test-2 to Test-3 and from Test-1 to Test-3.

In all the competencies there is an improvement of scores from Test-1 to Test-2 and Test-2 to Test-3 and from Test-1 to Test-3.

However, in Reading competency, the improvement observed from Test-1 to Test-2 and from Test-2 to Test-3 are not significant. However, there is a significant increase in the Reading skill score from Test-1 to Test-3.

In writing competency, though the improvement from Test-1 to Test-2 is not significant, there is significant improvement from Test-2 to Test-3. Naturally, the improvement from Test-1 to Test-3 is more significant at 0.01 level.

Likewise, in Numeracy also, the improvement from Test-1 to Test-2 is not significant. However, significant improvements were observed from Test-2 to Test-3 and from Test-1 to Test-3.

Thus on the whole the findings in this section indicate improvement of literacy skills over consecutive tests and this improvement has appeared significantly from Test-2 to Test-3.

Perhaps this might be indicative of an interesting dynamics operating behind the tests. To the learners the first test is an exciting encounter with a hi-tech gadget like the computer. But then the learner is guided by the volunteer in terms of using the system. The second test is more of a self-operating exercise with limited guidance from volunteer. It is a mixture of pride and excitement resulting from self-exploration and operation.

By the third test, the learners are familiar both with operating the system as well as the cognitive task ahead. As such the learning improvement has become significantly visible in Test-3

#### **4.6 Conclusions**

To conclude, the statistical analysis of the data revealed the following points:

- The HP Literacy Testing Solution is a valid and reliable Test for assessment of literacy skills.
- Consecutive Tests with HP Literacy Testing Solution are likely to result in the improvement of literacy skills. In other words it facilitates learning of literacy skills.

## Chapter 5: Feedback from Learners

### 5.1 Introduction

HP Literacy Testing Solution is a new ICT intervention in literacy assessment. Learners have not been exposed to this kind of multimedia interactive mode of testing earlier. As such the feedback of learners' experiences and reactions have to be taken into consideration for further refinement of the tool as well as the procedure adopted in testing them.

In order to elicit required feedback, interviews were conducted with learners (221) who took the online test during the third phase of the pilot study. The distribution across mandals is given in Table 5.1.

Mandal	Male	Female	Total
Kuppam	29	25	54
Ramakuppam	28	10	38
Santhipuram	25	20	45
V. Kota	30	19	49
Gudipalli	11	24	35
Total	123	98	221

Table 5.1: Distribution of Learners Interviewed across Mandals

The interviews were conducted by the Preraks who accompanied the learners to the Testing Centres. The semi-structured Interview had questions focusing on:

1. The perceived advantages of online testing
2. Suggestions for further improvements
3. Other observations about their reactions towards 'Bathukubata' supplementary reader etc.

### 5.2 Analysis of the Feedback

Three major sections of observations have emerged from the analysis of the interview data that will be detailed later. They include:

1. Section A: Why I liked the test i.e. reasons for liking the test.
2. Section B: It will be better if... i.e. suggestions for future improvements
3. Section C: Other observations including Bathukubata Reader.

For Analysis Purposes percentages were calculated for each response based on its frequency of occurrence.

### 5.2.1 Section A: 'Why I liked the Test'

The major feedback obtained by interviews revealed that the HP Literacy Testing Solution has been received positively by all the learners unanimously. All the learners liked the Test (221). The reasons for liking the test are categorized under two sections:

- a. Technology related
- b. Content related

Majority of the responses obtained are technology related and a few are content related. These are summarized later.

Sl. No	Reasons Technology	Response Frequency					Total Response obtained
		Kuppam	Rama Kuppam	Santhipuram	V.Kota	Gudipalli	
1.	<b>Technology Related</b> Audio visual presentation of the Test	38	10	7	39	35	129 (58.37%)
2.	No need to write	36	31	-	5	15	87 (39.36%)
3.	Touch Screen Technology is exciting	5	40	-	36	-	81 (36.65%)
4.	Oral explanation of questions	1	23	10	12	31	77 (34.84%)
5.	Immediate feedback	25	5	5	14	25	74 (33.48%)
6.	Easy to understand	25	5	11	-	31	72 (32.57%)
7.	Easy to operate	34	4	-	-	29	67 (30.31%)
8.	Mistakes committed are explained	-	-	-	-	24	24 (10.85%)
9.	Questions can be listened repeatedly	7	-	-	-	7	14 (6.33%)
10.	It is a novel experience	-	-	12	-	-	12 (5.42%)
11.	Helps to identify correct answer	-	-	-	-	10	10 (4.52%)
12.	Interesting to operate	-	-	5	-	-	5 (2.26%)



1.	<b>Content Related</b> Style of presentation of questions	12	-	-	1	6	19 (8.59%)
2.	Improve thinking	-	-	-	-	19	19 (8.59%)
3.	Meaningful words given	-	-	3	-	6	9 (4.07%)
4.	Pictures are colorful	-	-	-	-	5	5 (2.26%)

Table 5.2: Reasons for Liking the Test

### 5.2.1. a. Technology Related Aspects

1. The audiovisual presentation of the HP Testing Solution has been reported most often as the reason for liking the Test (58.37%).
2. There is no need to write is another major reason mentioned by learners (39.36%). Does this mean that learners do not like writing for some reason or other? The following indicate that it is not so.
3. The touch screen technology is exciting to them (36.65%).
4. 'Questions are orally explained' is another aspect that learners appreciated (34.84%). And they are happy that it is possible to listen to the questions any number of times repeatedly (6.33%).
5. Immediate feedback on performance is another reason stated by learners (33.48%). Learners mention that even the mistakes committed are explained (10.85%). Thus, it helps to identify correct answers mentioned some learners (4.52%).
6. It is easy to understand (32.57%), easy to operate (30.31%) expressed some learners. Some felt that it is a novel experience (5.42%) and described that it is interesting to operate (2.26%).

### 5.2.1.b. Content Related Aspects

1. The style of presentation is good appreciated learners (8.59%).
2. Some learners observed that it improves thinking (8.59%).
3. Meaningful words are given, stated some learners (4.07%).
4. And some appreciated it for its colorful pictures (2.26%).

## 5.2.2 Section B - Suggestions for Future Improvements

From the analysis of data, it is observed that majority of the learners have given suggestions related to its use and two suggestions related to content were obtained.

Sl. No	Suggestion	Response Frequency					Total
		Kuppam	Rama Kuppam	Santhipuram	V.Kota	Gudipalli	
1.	<b>Extended Utility</b> Make it a permanent feature in CEC	37	-	-	13	15	65 (29.41%)
2.	Make it available to all learners in our village	-	15	20	-	15	50 (22.62%)
3.	Provide this testing again and again	6	12	3	-	20	41 (18.55%)
4.	Make this available for literacy learning	-	20	-	-	20	30 (13.57%)
5.	This may be used for teaching school children	-	-	13	-	3	16 (7.23%)
6.	Use this for retention of literacy skills	7	-	-	-	-	7 (3.16%)
7.	Keep it in all Gram Panchayats	-	-	-	-	5	5 (2.26%)
1.	<b>Content Related</b> Increase the number of questions	20	-	8	10	15	53 (23.98%)
2.	Improve technology for testing writing skill	-	-	-	-	5	5 (2.26%)

Table 5.3: Suggestions for Future Improvement

### 5.2.2.a. Extended Usage

1. Make it as a permanent feature in Continuing Education Centres (CECs) is the suggestion most frequently mentioned (29.41%). It can be utilized for the retention of literacy skills felt some learners (3.16%).
2. Make it available to all learners in our village is another suggestion given by learners (22.62%). Some even suggested to keep it in all Gram Panchayats (2.26%).

3. Provide this Testing again and again is another suggestion given by many of the learners (18.55%).
4. Make it available for literacy learning is another suggestion given by learners (13.57%) who felt that it would be nice to learn literacy skills through this instrument.
5. It would be useful to teach school children some learners (7.23%) suggested.

#### **5.2.2.b. Content Related Suggestions**

1. Increase the number of questions in the instrument is one major suggestion given by learners (23.98%).
2. Improve technology for testing writing skill is another content related suggested by learners (2.26%).

#### **5.2.3 Section C - Other Observations**

##### **5.2.3.a. Satisfaction with Performance**

The majority of the learners interviewed reported that they answered the test satisfactorily (85%). Among those who could not do it as per their satisfaction, the reasons attributed by them are:

1. Forgetting what is learnt
2. Difficulty of questions
3. Too many questions

##### **5.2.3.b. Reactions to 'Bathukubata' Supplementary Reader**

- Among the 221 learners interviewed, 150 (67.87%) reported that they have attended all literacy sessions and read all the lessons of 'Bathukubata' Reader. Among the remaining 71 learners, many attended the lessons partially and a few learners could not attend any of the lessons. Due to busy work and health problems, they could neither attend the sessions conducted by the preraks nor go through the lessons by themselves.
- Among the 8 lessons of Bathukubata seven lessons are reported to be liked by the learners.
- Among these lessons, AIDS (AIDS ku Dooram Andariki Kshemam) was mentioned most frequently by the learners (82.66%).
- Marriage Age (Pelli Vayassu) is another lesson mentioned by the learners (69.33%) as next most interesting.
- Farmer's Letter (Raitanna Vuttaram) is yet another lesson mentioned by learners (38%). The other lessons reported to be interesting by learners are Hygiene and Health (Parisubhrata – Arogyam) (26.66%), Nutritious Food (Poshakaharam) (21.33%), Continuing Education (Nirantara Vidya) (14.66%) and Child Labour (Badiki Poye Vayassu) (10.00%)



**"Touching the screen  
and  
answering is exciting."**



**"It tells marks  
then and there."**

**"It clearly tells what to do."**



**"It makes us to think and answer"**



**"I like it because it speaks.  
It explains what do.  
It is easier to answer."**



**"I want to do it again."**



**"It will be good  
if new questions  
come every time."**



**"Make this testing  
available to everybody."**



### **5.3 Some Representative Feedback**

Over and above the formal feedback that was analyzed earlier, some of the statements of the learners who took the test are given below which cross-validate the earlier analysis.

1. "Computer Test is very easy. It is very easy to identify answers."
2. "Computer Testing is very good. I feel like doing it again and again."
3. "We can answer just by touching."
4. "I like it because there is no need to write."
5. "Touching the screen and answering is exciting."
6. "It tells marks then and there."
7. "It is nice to know whether our answer is correct or incorrect."
8. "It clearly tells what to do."
9. "I like it because it speaks. It explains what do. It is easier to answer."
10. "It makes us to think and answer."
11. "If Computer Testing is arranged in our CEC, we can do it whenever convenient to us."
12. "I want to do it again."
13. "It is good if this testing is given to all other learners in our village."
14. "It will be good if new questions come every time."
15. "It is good if this Testing is continued forever."
16. "If this instrument is used for teaching letters, people can learn faster. Then they can take the test."
17. "It is good if this Testing is given to school children."
18. "Make this testing available to everybody."

### **5.4 Conclusions**

To conclude, the feedback from learners can be summarized as follows:

1. The multimedia presentation, the interactive mode of operation and the content of testing are the important factors attracting the learners toward the Testing Solution.
2. Learners suggested that the Testing Solution may be continued on a permanent basis at Continuing Education Centres. It may be utilized for evaluation, retention and teaching of literacy skills. It can be used in literacy programs as well as in formal schools.
3. The fact that they all liked the test indicates that this could be a motivating factor in terms of getting learners to take the test.

## **Chapter 6: Possible Larger Scale use of HP Literacy Testing Solution**

The findings and observations obtained by the Pilot Study indicate several implications in the field of both non-formal and formal education. They open-up possibilities of several applications of the HP Testing Solution in the field of education and literacy and highlight several advantages associated with them.

### **6.1 Possible uses of HP Literacy Testing Solution**

#### **6.1.1. HP Literacy Testing Solution as an Evaluation Tool**

HP Literacy Testing Solution can be effectively used for assessing literacy skills achieved by adult learners. It can be used in both formative and summative evaluation of literacy skills learnt by adults. It can also be used for conducting benchmark surveys on the status of literacy and educational achievement.

The advantages of using the HP Literacy Testing Solution are many and are summarized as follows:

- a) The learners' motivation to participate in the evaluation process is very high by using the HP Literacy Testing Solution.
- b) Evaluating using the HP Literacy Testing Solution yields more authentic and reliable data. As every test administration presents a new set of questions, the possibility of copying is ruled out.
- c) It provides instant programme achievement information to the implementors of the programme. The testing can be administered immediately after the conclusion of programme and results can be declared immediately. Thus it enables implementing agencies like Zilla Saksharatha Samithis to plan future activities effectively without delays.
- d) Evaluation using the HP Literacy Testing Solution involves limited expenditure as there is no need for printing test papers and a single computer can be used for any number of learners for any number of times.

The use of computer for testing is not a costly affair as many people think. Assuming the cost of running a computer for year as Rs.10,000/- (about 40%) of the cost of the computer without touch screen), and assuming that the computer system is used 8 hours per day for 250 days, the cost of using a computer per hour comes to about Rs. 5/-. Thus it comes to Rs. 2.50 for individual learners for taking the test since our results indicate that after multiple attempts the learner can take the test in 30 minutes.

- e) Testing the competencies of learners at different levels is also possible with the HP Literacy Testing Solution. By having a unique identification of learners, the machine can trace the skills that the user has demonstrated while taking the test and thereby it would be possible to test the rest on later occasions.

- f) Evaluation on the HP Literacy Testing Solution provides authentic data for recording of learner's performance, and for issuing of certificates if so required. It is possible to give printed certificates immediately after testing with the learner's photograph printed at a minimum cost of Rs. 5/- per learner.
- g) By using the HP Literacy Testing Solution, the Zilla Saksharatha Samithis (ZSSs) can work faster, easier and more effectively. The HP Literacy Testing Solution enables ZSS to collect evaluation data directly from systems. ZSS can send the data through CDs / floppies as per it's requirements.

#### **6.1.2 HP Literacy Testing Solution as Learning Aid in Literacy Instruction**

Learners in basic literacy centres can use the HP Literacy Testing Solution for doing exercises and drills on the components taught. Especially for those learners who are slower than others and need extra learning on selected competencies, it becomes a boon. It also helps those who want to invest extra efforts and learn faster.

#### **6.1.3 HP Literacy Testing Solution as a Device for Sustaining Literacy at Continulng Education Centres**

Sustaining literacy is in fact more crucial than imparting literacy. The HP Literacy Testing Solution can be used as an excellent tool for sustaining literacy of neo-literates.

If neo-literates are made to take on-line testing as frequently as possible, their fragile literacy skills improve and get strengthened. Thus the possibility of relapse into illiteracy will be reduced.

#### **6.1.4 HP Literacy Testing Solution as an Instructional Device for Basic and Post Literacy Skills**

The HP Literacy Testing Solution can become an effective on-line primer for adult learners with little technical changes and increased content.

If the content is increased to cover all the letters and signs to be taught, the HP Literacy Testing Solution may become a literacy teaching solution.

As an on-line primer equipped with multimedia interactive mode of operation, it will be highly useful in attracting adult learners towards learning centers. By virtue of it's interactive mode, learners tend to actively participate in the teaching learning process inspite of the curriculum approach used.

Moreover it reduces the need for depending on volunteer instructors. It is cost effective and makes the learner self-directed and self correcting which satisfies the adult mindset.

By developing on-line contents of different developmental departments like Health, Nutrition, Agriculture etc. in the Programmed Learning Method the HP



Literacy Testing Solution may become the HP Awareness Solution, an effective learning device for neo-literates at Continuing Education Centres.

By including thought provoking puzzles etc. the HP Literacy Testing Solution can help neo-literates to develop higher cognitive skills which result in developing the logical thinking, problem solving, communications etc.

#### **6.1.5 Applications of HP Literacy Testing Solution in other Areas**

- a) The HP Literacy Testing Solution can also be used for assessing literacy skills of school children of primary classes and students of open schools.

By incorporating suitable content it can be used for assessing achievement of upper primary and high school students also.

By making necessary changes in the content, the HP Literacy Testing Solution can be used for evaluating the effectiveness of different training programmes organized by different developmental departments like health, family welfare, women empowerment etc. and institutions like Jana Sikshana Samsthans and SETWINS etc.

- b) The HP Literacy Testing Solution can be used effectively as a skill sustaining device for school children of upper primary sections and dropouts of open schools etc.
- c) The HP Literacy Testing Solution can be used as an educational aid for doing exercises and drills for the students of primary classes and open schools.
- d) The HP Literacy Testing Solution by making necessary changes can become a good instructional device for students of primary sections and open schools.

#### **6.2 Possible Improvements to the HP Literacy Testing Solution**

There are some issues that can be addressed for making it even more effective. Some of them can be addressed immediately and some others can be considered on a long-term basis.

##### **6.2.1 Short-term Improvements**

- a) The Question bank may be enlarged to avoid frequent repetition of questions.
- b) The size of letters on the monitor may be increased to make them more visible.
- c) The screens may be presented with more colourful backgrounds.
- d) Questions and answers may be presented in different colours to enable learners to differentiate them easily.

##### **6.2.2 Long term improvements**

- a) Technology may be developed for assessing writing skills directly. Assessing by derivative writing skills may be effective but it will not be identical to assessing direct writing skills.
- b) The software may be simplified so that the learner can directly start the test without depending on some other individual to initiate the testing.

### **6.3 Need for Larger-scale Use**

In summary, the pilot study has shown that the HP Literacy Testing Solution is a valid and reliable, cost-effective, learner-friendly and interactive multimedia tool for assessing the literacy skills of adult learners.

And hence, the Government of Andhra Pradesh which is pursuing a proactive policy of promoting basic literacy and continuing education through ICT can utilize this innovative assessment instrument in the realization of its objectives of total literacy by 2005 and consequent development of a knowledge society. In other words, the HP Literacy Testing Solution deserves to be deployed on large-scale utilization in the literacy programmes of Andhra Pradesh.

A model for large-scale deployment is proposed in the next section for the consideration of the Government of Andhra Pradesh.

### **6.4 A Model for Large-scale Deployment**

#### **6.4.1 HP Literacy Testing Solution can be deployed in Community Learning Centres (CLCs)**

The HP Literacy Testing Solution can be deployed in the Community Learning Centres (CLCs) proposed to be established by the Government of Andhra Pradesh.

The Government of Andhra Pradesh is evolving an institutional framework for life-long learning, in pursuance of its commitment to the development of a knowledge society. In this context, Community Learning Centres are being proposed to be established in each Gram Panchayat. The community learning centers are visualized as nodal points for converging all the activities of Continuing Education Centers, Open Schools and Libraries. It would be the central point for all departments for reaching out to their respective clientele, providing extension services to farmers, fishermen, artisans etc.

The convergence of different agencies providing extension education at the grass-root level will involve location convergence, functional convergence, personnel convergence and financial convergence. As such, provision of computer systems to CLCs becomes essential for making the information hubs. The Government of Andhra Pradesh is hopeful of providing computers in a phased manner to every CLC perhaps, in view of the funds arising out of financial convergence and the donation of systems by corporate agencies like Tata Consultancy Services who have already donated 740 systems.

As such the HP Literacy Testing Solution can be deployed ideally in the Community Learning Centres to cater to the needs of literacy and continuing

education of learners in the purview of that Gram Panchayat and nearby habitations.

#### **6.4.2 Zilla Saksharatha Samithi as the Nodal Agency at the District Level**

The Zilla Saksharatha Samithi (ZSS) can act as a nodal agency for implementing the HP Literacy Testing Solution at the district level. The Deputy Director, Adult Education / Secretary, Zilla Saksharatha Samithi, the Mandal Literacy Officer (MLO), the Prerak who is in-charge of a CLC can be made responsible for the installation operation and monitoring at district, mandal and CLC levels respectively.

The Zilla Saksharatha Samithi can use the HP Literacy Testing Solution on the computer systems at the CLCs in its purview. It can implement any assessment programmes through HP Literacy Testing Solution established in CLCs. The Zilla Saksharatha Samithi can also obtain the data collected at CLCs and store it. After analysis and consolidation, the data can be sent to the State Literacy Mission Authority by converting the collected data into CDs/floppies.

The Deputy Director, Adult Education can be made responsible for the installation, functioning and technical maintenance, monitoring of the assessment instrument in the district concerned.

The Mandal Literacy Officer may be made responsible for the installation, functioning, technical maintenance and monitoring of the systems in all the CLCs in his mandal.

At the CLC level, the Prerak may be made responsible for installation, technical maintenance and operation of the instrument at the CLC.

#### **6.4.3 Technical Maintenance of the systems can be arranged by hiring services of local technicians**

The Technical maintenance of the systems and the HP Literacy Testing Solution can be done by arranging a technically qualified and experienced local person who monitors the systems on a regular basis, perhaps once in 10 days. For this purpose, a technical person can be hired one for each mandal with a payment of Rs.3,000/- per month. The payments for this person can be done from the convergence funds of CLCs.

#### **6.4.4 Training of personnel may be organized through different agencies at different levels**

The personnel of ZSS and others involved in the implementation of this work need orientation and training on the functioning of the HP Literacy Testing Solution and their role in the implementation of the system.

The district level functionaries may be given orientation by the State Resource Centre for Adult Education. Consequently, Mandal Literacy Officers can be trained at the Zilla Saksharatha Samithi level. And Preraks may be trained by ZSS at the Mandal level. The technical persons appointed for maintenance purpose may be trained by some governmental IT agency.

#### **6.4.5 Enlargement of the Question Bank may be assigned to State Resource Centre for Adult Education**

Enlargement of the Question Bank is necessary to avoid frequent repetition of questions. At present there are 150 question items with 5 items in each of 10 blocks for 3 competencies (reading, writing and numeracy). Thus for each block now there are 5 alternatives available. If this number is increased to 20, i.e., if another 15 alternatives are added for each block, there will be a total of 600 items and repetition of questions will be reduced substantially.

This task of content creation may be assigned to the State Resource Centre for Adult Education.

#### **6.4.6 Development of Technology for assessing writing skills directly may be done by Hewlett-Packard**

The effectiveness of HP Literacy Testing will be maximized by empowering it to assess writing skills directly. The development of technology for assessing direct writing skills needs to be undertaken by Hewlett Packard the creators of this ICT solution.

To summarize, the HP Literacy Testing solution can be deployed in CLCs on a large-scale in a systematic way with long range planning.

#### **6.5 Model for Immediate Deployment**

The HP Literacy Testing Solution can be put into use immediately by installing the HP Literacy Testing Solution in the computer systems available at mandal offices, high schools and literacy centres keeping MLOs as in-charge of the implementation and maintenance.

Whenever required, the concerned ZSS can utilize the system for assessing the literacy skills of basic learners. And this will give feedback not only of adult learners' literacy skills but also on the issues of administration that need to be further addressed before installing in CLCs.

The other arrangements about personnel may be done as described in the permanent deployment model presented earlier.

To conclude, large-scale deployment of the HP Literacy Testing Solution is essential. There is no doubt, the efforts of the Government of Andhra Pradesh will be greatly facilitated by the extensive use of HP Literacy Testing Solution in the literacy programmes of the State.

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## **HP LITERACY TESTING SOLUTION**

### **A Set of Sample Questions**

#### **Pattern of Designing the Test Items**

##### **A. Reading**

###### Question – 1

Level of difficulty:	Easy
Topic Identification:	Picture Identification
Ability:	To read simple words with vowels, consonants and vowel signs with picture as cue.
Task:	Learner has to look at the picture shown on the computer, identify it's name among the words given.
Example:	Picture of a Rat is shown. Learner has to identify the word Eluka (Rat) among the four words (1) Eruka, (2) Eluka, (3) Velaga, (4) Palaka

###### Question – 2

Level of difficulty:	Easy
Topic Identification:	Word Identification – level 1.
Ability:	To read simple words (2/3 letters) composed of vowels, consonants and vowel signs with 'word' as cue.
Task:	Learner has to read the word on the computer and identify the object indicated by that word, from three options.
Example:	The word 'cycle' is shown and the pictures of (1) car, (2) scooter, (3) cycle are given. Learner has to identify the picture indicated by the word given.

###### Question – 3

Level of difficulty:	Easy
Topic Identification:	Word Identification level – 2.
Ability:	To read the simple words (with 2/3 letters) composed of vowels, consonants, vowel signs and consonant signs with audio as cue.

**Task:** Learner has to listen to a word and identify that word from the four words given.

**Example:** A word 'Gramam' (village) comes out of system. Four words (1) Gramam, (2) Pranam, (3) Prema, (4) Grasam appears on desk top.

Learner is asked to identify the written form of the word that was heard.

Question – 4

**Level of difficulty:** Medium

**Topic Identification:** Correct phrase Identification.

**Ability:** To read and comprehend the phrases given.

**Task:** Learner has to read the phrases given on the computer and identify the phrase that is meaningful.

**Example :** Three phrases (1) Auto Chenu, (2) Auto burada, (3) Auto Riksha are given.

The learner has to identify the meaningful phrase.

Question – 5

**Level of difficulty:** Medium

**Topic Identification:** Wrong sentence identification

**Ability:** To read and comprehend small sentences.

**Task:** Learner has to read the three sentences shown on the computer and to identify the sentence that is not having proper meaning.

**Example:** The three sentences (1) Tar Road was laid down to our village; (2) Native place is like our mother; (3) Saroja, Sarada are brothers.

The learner is asked to identify the sentence that does not have proper meaning.

Question – 6

**Level of difficulty:** Medium

**Topic Identification:** Fill in the blanks

**Ability:** To read a sentence and filling the blanks with correct word to make it meaningful.

**Task:** Learner has to read a sentence having a blank space and identify a word suitable to complete the sentence meaningfully.

Example: The sentence "Iddaru Pillalu Intiki \_\_\_\_\_" is given on the computer. The learner has to select the right word to fill the gap from (1) Eddu, (2) Moddu, (3) Muddu, (4) Muggu.

Question – 7

Level of difficulty: Medium  
Topic Identification: Fill in the blanks  
Ability: To read and understand with comprehension.  
Task: Learner has to read a part of a sentence and to identify the other part that completes it meaningfully, from four options.

Example : The sentence 'Bangaramma tana Kodalini \_\_\_\_\_' is shown on the computer.  
Learner has to identify the other half of the sentence from the following halves. (1) Kosi Kura Chesindi; (2) Kuturula Chusukuntundi; (3) Nagalito Dunnindi; (4) Eruvulu Vesi Penchindi.

Question – 8

Level of difficulty: Hard  
Topic Identification: Picture Comprehension.  
Ability: To be able to transform visual experience into linguistic expression.  
Task: Learner has to see a picture and identify the sentence that explains the activity depicted in the picture.

Example: The picture of a man reading a newspaper is shown. The learner has to identify the sentence which explains the activity shown in the picture from three alternative sentences (1) Chandrayya Annam Thintunnadu (Chandrayya is eating food); (2) Chandrayya Paper Chaduvutunnadu (Chandrayya is reading news paper); (3) Chandrayya Vuttaram Rasthunnadu (Chandrayya is writing a letter).

Question – 9

Level of difficulty: Hard  
Topic Identification: Reading Comprehension – 1.  
Ability: To read and comprehend a small passage of about three sentences and use that comprehension, in choosing a correct sentence.



**Task:** Learner has to read a small passage of three simple sentences and basing on the comprehension of the passage has to identify a correct sentence among three alternative sentences.

**Example:** A passage is given as follows:  
"Rajesh and Ramesh got into the bus. Rajesh bought ticket to Chittoor. Ramesh bought ticket to Madanapalli".

The learner basing on the comprehension of above passage has to identify the correct sentence among the sentences given

- (1) Rajesh has to go to Madanapalli
- (2) Ramesh has to go to Chittoor
- (3) Rajesh has to go to Chittoor

Question – 10

**Level of difficulty:** Hard

**Topic Identification:** Reading Comprehension –2.

**Ability:** To read and comprehend a passage of 5/6 sentences and use his comprehension in answering a question based on the passage.

**Task:** Learner has to read and comprehend a passage of 5/6 simple sentences, and a question given based on the passage. And he has to choose the right answer from among three alternatives given.

**Example:** A passage is given as below

"In Kerala, there is a village by name Puthotta. People of that village are constructing boats with coir. First they prepare a metal mould of the boat. And a coir mat is attached to that mould. They apply gum on that and sprinkle coir dust. It costs 14 thousand to construct this boat.

Q. Which material is used by Puthottam villagers for constructing boats?

Learner has to select one answer from the below

Iron

Wood

Coir

## **B. Writing**

### Question – 1

Level of difficulty:	Easy
Topic Identification:	Correct spelling identification
Ability:	To identify the correct spelling of a word composed of vowels and consonants.
Task:	The learner has to look at the picture and to identify the name of that object which is correctly spelt from 3 options.
Example:	The picture of 'House Fly' is shown. Learner is asked to identify the name of the picture shown from the following three alternatives. (1) Iga; (2) Eera; (3) Eega (The emphasis is on spelling)

### Question – 2

Level of difficulty:	Easy
Topic Identification:	Word completion
Ability:	To identify the correct spelling of a word composed of vowels, consonants and vowel signs. The issue here is to discriminate between different letters and signs. (vowels, consonants and vowel signs).
Task:	Learner has to look at a picture identify it's name and complete it's name with correct letter.
Example:	Picture of 'Elephant' is given. And an incomplete word Eenu_____ is given. The learner has to complete the word correctly by choosing one letter from the three alternatives like (1) Vu; (2) Gu; (3) Ku.

### Question – 3

Level of difficulty:	Easy
Topic Identification:	Word identification
Ability:	To be able to identify the correct form of a given vowel sign.
Task:	The learner has to identify / locate a word which contains the specified vowel sign.

**Example:** Learner is shown four words such as  
(1) Kunda; (2) Pindi; (3) Gede; (4) Kura  
And he is asked to identify the word which contains the vowel sign 'kommu Deergham'.

Question – 4

**Level of difficulty:** Medium  
**Topic Identification:** Wrong spelling identification  
**Ability:** To identify the place where Mahaprana or rare consonant is to be used and written.  
**Task:** Learner has to identify a word that is wrongly spelt from among a four words, which include vowels, consonants, Mahapranas (rare consonants) and vowel signs.

**Example:** The learner is given four words like  
(1) Bhojanam; (2) Resanu sapu; (3) Pareekshalu;  
(4) Bharateeyulu.  
And he has to locate the wrongly spelt word.

Question – 5

**Level of difficulty:** Medium  
**Topic Identification:** Correct spelling identification  
**Ability:** To identify the correct form in which a consonant sign is to be written.  
**Task:** Learner has to look at a picture and complete it's name with correct conjunct letter.  
**Example:** Learner is shown the picture of 'chair'. There is an incomplete word 'K \_\_\_\_\_.' The learner has to complete the word with correct letter choosing one from the three letters given

- (1) 'Ree' with consonant sign of 'ba'
- (2) 'Ree' with consonant sign of 'cha'
- (3) 'Ree' with consonant sign of 'pa'

Question – 6

**Level of difficulty:** Medium  
**Topic Identification:** Word forming

**Ability:** To be able to form words with given letters, involving vowel signs.

**Task:** Some 6 letters are given in a visual pattern. And a list of 5 words are given. The learner has to identify the word which can not be formed with the letters given in the visual pattern.

**Example:** Six letters Da, Ba, Ga, Bu, O (Sunna), Ra are given in a chain. And the words

(1) Danda, (2) Gandam, (3) Ganga, (4) Babu, (5) Burada are given

Learner has to locate the word that cannot be formed with letters given in the chain.

#### Question – 7

**Level of difficulty:** Medium

**Topic Identification:** Grammar Error Identification

**Ability:** To be able to identify the correct form of writing a sentence, i.e., the correct use of 'Vibhakti Pratyayas' (prepositions) and their placements.

**Task:** Learner has to read three sentences given and has to identify the sentence which is correctly written.

**Example:** Learner is shown the following 3 sentences.

- (1) Rosamma Koduku Patnamlo Chaduvutunnadu.
- (2) Rosamma Koduku Patnamloki Chaduvutunnadu
- (3) Rosamma Koduku Patnam Chaduvutunnadu

#### Question –8

**Level of difficulty:** Hard

**Topic Identification:** Letter puzzle

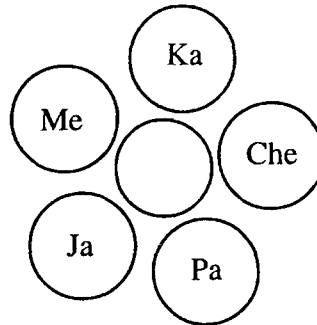
**Ability:** To be able to build words involving consonant signs.

**Task:** Learner has to read five letters given in a flower (petals). Centre of the flower is blank. If a specific letter is entered into that space, 5 meaningful words can be developed. When each of the letters in the petals are joined to the central letter, they form 5 meaningful words, one word for each petal.

Learner has to identify that letter which is suitable to be kept in the central space of the flower among 3 letters given.

Example:

The learner is shown the following flower.



(1) Nna; (2) Ttu; (3) Ppa

The learner is asked to identify the letter from the letters given above to fit in the central place to make 5 meaningful words.

Question – 9

Level of difficulty:

Hard

Topic Identification:

Word puzzle

Ability:

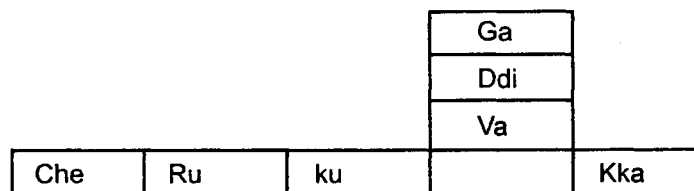
To be able to solve word puzzle using comprehension.

Task:

Learner has to read the horizontal and vertical words given in the puzzle. And has to identify the letter which the blank space can be filled to make two words meaningful.

Example:

The following is puzzle is given



The learner has to choose one letter from the 3 alternatives (1) Ko; (2) A; (3) Go; to make two phrases.

Question – 10

Level of difficulty:

Hard

Topic Identification:

Sequence identification

Ability:

To be able to arrange the sentences sequentially.

**Task:** Learner has to read 3 given sentences and comprehend their occurrence in sequential order. And he has to identify that sequence from 3 alternatives provided.

**Example:** The learner has to read the following sentences.

(1) Ramavaram Prajalaku Neeti Karuvu Teerindi. (Water problem was solved for the people of Ramavaram)

(2) Ramavaram Prajalantha Kalasi Cheruvu Pudika Teesaru. (People of Ramavaram joined together and desilted their water tank)

(3) Vanalu padi Ramavaram Cheruvu Nindindi. (Ramavaram tank got filled up due to rains)

He has to rearrange them mentally in correct sequence. And has to identify that correct sequence from the 3 sequences given.

### **C. Numeracy**

#### Question – 1

**Level of difficulty:** Easy

**Topic Identification:** Sequence Completion

**Ability:** To be able identify numbers in sequential order.

**Task:** Learner has to read the row of numbers given and has to fill the gap in the sequence. He has to identify the number that fills the blank from 4 alternatives.

**Example:** A row of trees is shown with numbers on them.

And there is a gap in between

Learner has to identify the number with which the blank space could be filled. He has to choose one from 4 alternatives

(1) 42; (2) 43; (3) 46; (4) 49

#### Question – 2

**Level of difficulty:** Easy

**Topic Identification:** Increasing order identification

**Ability:** To be able to arrange the given numbers in sequential order.

**Task:** Learner is shown some numbers in random. The numbers need to be arranged in increasing order. The learner is provided four sequences from which he has to select one in which the numbers are arranged in increasing order correctly.

**Example:** 6 numbers (60, 25, 46, 32, 40, 50) are given inside a circle in a random way

The numbers need to be arranged in increasing order. Learner has to identify that order from among 4 alternative sequences.

### Question – 3

**Level of difficulty:** Easy

**Topic Identification:** Addition -1

**Ability:** To calculate additions involving concrete objects.

**Task:** Learner is shown two sets of concrete objects and the learner has to count the objects in each set and add them.

Learner has to identify the result of the addition among four alternatives.

**Example:** A visual of two plants with flowers are shown. Learner has to count the flowers on each plant and find out the total number of flowers on two plants.

He has to identify the sum of the total flowers among the 4 alternatives provided (1) 18; (2) 15; (3) 16; (4) 17

### Question – 4

**Level of difficulty:** Medium

**Topic Identification:** Addition-2

**Ability:** To be able to do additions involving functional issues, involving single digits.

**Task:** Learner has to read and do the arithmetic problem involving functional additions and identify the correct answer among 4 alternatives.

**Example:** 'Venkatesh went to a hotel and ordered one plate Dosa and a cup of Tea. Dosa costs Rs.16/- and Tea costs 3 Rupees. How much is to be paid by Venkatesh ?'

Learner has to identify the correct answer from among 4 answers.

(1) 13; (2) 19; (3) 20; (4) 18

Question – 5

Level of difficulty: Medium  
Topic Identification: Addition level - 3  
Ability: To be able to do functional additions involving two digit numbers.  
Task: The learner is given a functional problem involving two digit numbers. The learner has to calculate the addition and identify the correct answer among 4 alternatives.  
Example: Seetha bought Rice for 75 Rupees and oil for 20 Rupees. What is the total amount spent by her?  
The learner has to identify the correct answer from the following 4 alternatives.  
(1) 100-00; (2) 95-00; (3) 85-00; (4) 105-00

Question – 6

Level of difficulty: Medium  
Topic Identification: Subtraction level-1  
Ability: To be able to do 2 digit functional subtraction without borrowing.  
Task: Learner has to read the functional arithmetic problem and has to identify the correct answer from the given 4 alternatives.  
Example: "Radha started for town with 75 Rupees in hand. She paid 15 Rupees for bus ticket. How much money is left with her ?"  
Learner has to choose correct answer from the 4 alternatives.  
(1) 50; (2) 60; (3) 70; (4) 80

Question – 7

Level of difficulty: Medium  
Topic Identification: Subtraction level -2  
Ability: To be able to do 2/3 digit functional subtractions with borrowing.  
Task : Learner has to go through the functional arithmetic problem involving 2/3 digit subtraction, do the



calculation and identify the correct answer from the 4 alternatives.

Example:

Kamala borrowed 90 Rupees from Vimala and repaid 55 rupees. How much money still has to be repaid by Kamala ?

Learner has to calculate the answer and choose the correct one from 4 alternatives.

(1) 55; (2) 45; (3) 35; (4) 25

Question – 8

Level of difficulty:

Hard

Topic Identification:

Multiplication-1

Ability :

To be able to multiply involving single digit functional problems.

Task :

Learner has to do the functional problem involving single digit multiplication and choose the correct answer from the 4 alternatives given.

Example :

Ramulamma has planted 7 rows of coconut plants with 8 plants in each row. How many plants were planted by Ramulamma totally? Learner has to choose the correct answer from 4 alternatives.

(1) 49; (2) 56; (3) 42; (4) 63

Question – 9

Level of difficulty:

Hard

Topic Identification:

Multiplication - 2

Ability:

To be able to functional problems involving multiplying two digit number with one digit number.

Task:

Learner has to do the arithmetic problem involving multiplication of two digit number by single digit number. He has to identify correct answers from 4 alternatives.

Example:

'Saroja bought 5 kilos Tamarind at the rate of Rupees 18 per kilogram. How much is to be paid by her to the shop?

Learner has to choose the correct answer from 4 alternatives.

(1) 180; (2) 75; (3) 90; (4) 40

Question – 10

Level of difficulty:

Hard

Topic Identification: Division

Ability: To be able to do functional arithmetic problems involving division of 2/3 digit numbers by one digit number.

Task: Learner has to arithmetic problem involving division of two or three digit number by single digit number and identifying the correct answer from 4 alternatives.

Example : Hanumanthu got 90 Rupees by selling 6 kilos of dal. How much is the price of one kilo dal sold by Hanumanth?" Learner has to choose correct answer from 4 alternatives

(2) 20; (2) 10; (3) 15; (4) 25

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