

ADOPTING TECHNOLOGY

FOR IMPROVING ADULT LITERACY

A Policy Paper by Wadhvani Institute of Technology & Policy

Authors

NIVEDITA KRISHNA, UTKARSH SINGH, ALOK GUPTA

December 2022



Table of Contents

Executive Summary	04
1. Introduction	06
2. Adult Literacy in India – Concept & Initiatives	07
2.1 Government Programmes	09
2.2 Non-Government Initiative	11
3. Challenges in Adult Literacy	14
3.1 Challenges in Teaching	15
3.2 Challenges in Training	19
3.3 Challenges in Monitoring & Evaluation	19
4. Global Best Practices	21
5. Recommendations	25
Annexure A: Government Literacy Programmes	31
Annexure B: Non-Government Literacy Initiatives	33
Annexure C: Government Technology based Literacy Initiatives	37
Annexure D: Global Technology Interventions for Adult Literacy	40
Annexure E: List of Districts with 10 Lakh+ illiterates (15+ age group)	44
Annexure F: List of Districts with 5 Lakh+ illiterates (15+ age group)	46

Executive Summary

Adult literacy has evolved in India from basic literacy (reading-writing-arithmetic capability) during pre-independence to a holistic approach of lifelong learning.

The literacy rate in India, as per 2011 Census, has reached 74.04 %, which reflects that there is still a large segment of population (~25 Crores) in 15+ age group which remains illiterate. This has substantial impact on national development. The government has over time implemented various programmes to improve adult literacy in the country with varying success. Programmes like Sakshar Bharat Mission have been able to impact more than 7.64 crore illiterate people, however, the continuity of outcomes and lifelong aspect of learning still requires adequate measures.

The new adult literacy initiative is taking shape to eradicate illiteracy. Factors like the geographical spread of illiteracy, gender disparity, learner diversity, lack of mobilization, and limited financial resources needs to be accounted for and addressed in order to achieve better literacy levels. This paper contours the landscape of adult literacy in India, to identify how technology can be leveraged as a solution to address challenges in the delivery of adult literacy programs including the learning content, training of educators and monitoring and evaluation of the adult literacy program. It also provides an extensive, though not exhaustive compilation of domestic and international examples where technology has been used in adult literacy.

Census Wise Illiteracy Trend (1951-2011)

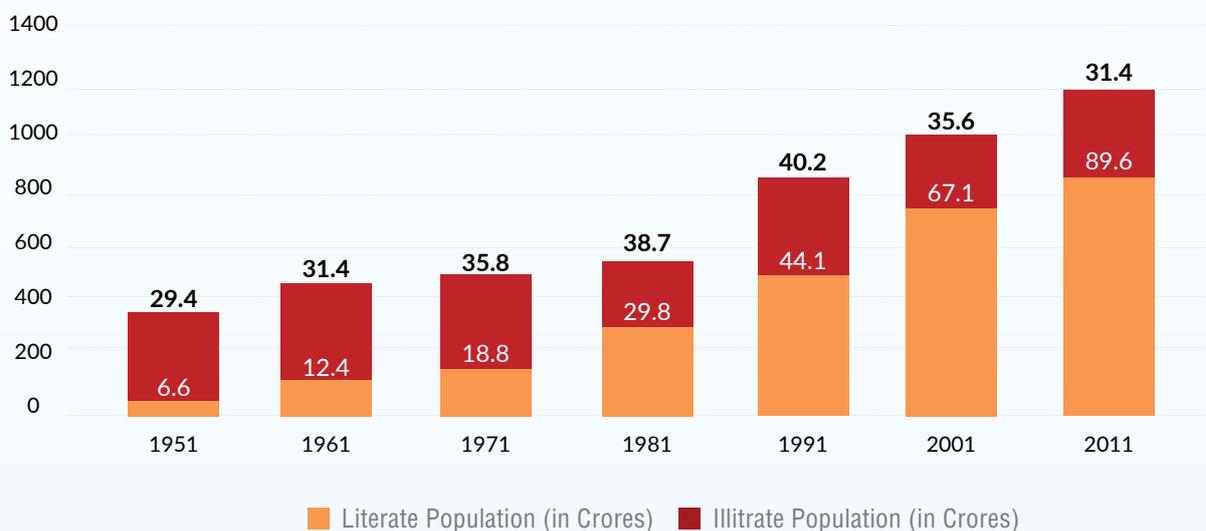


Figure A : Computed and Reproduced from Census Figures for Total Literate and Illiterate People in the country.^{a,b,c,d}

^a<https://archive.pib.gov.in/archive/releases98/lyr2003/rsep2003/06092003/r060920031.html>

^bhttps://www.indiabudget.gov.in/budget_archive/es2006-07/chapt2007/tab97.pdf

^chttps://www.indiabudget.gov.in/budget_archive/es2001-02/chapt2002/chap107.pdf

^d<https://pib.gov.in/newsite/PrintRelease.aspx?relid=71383>

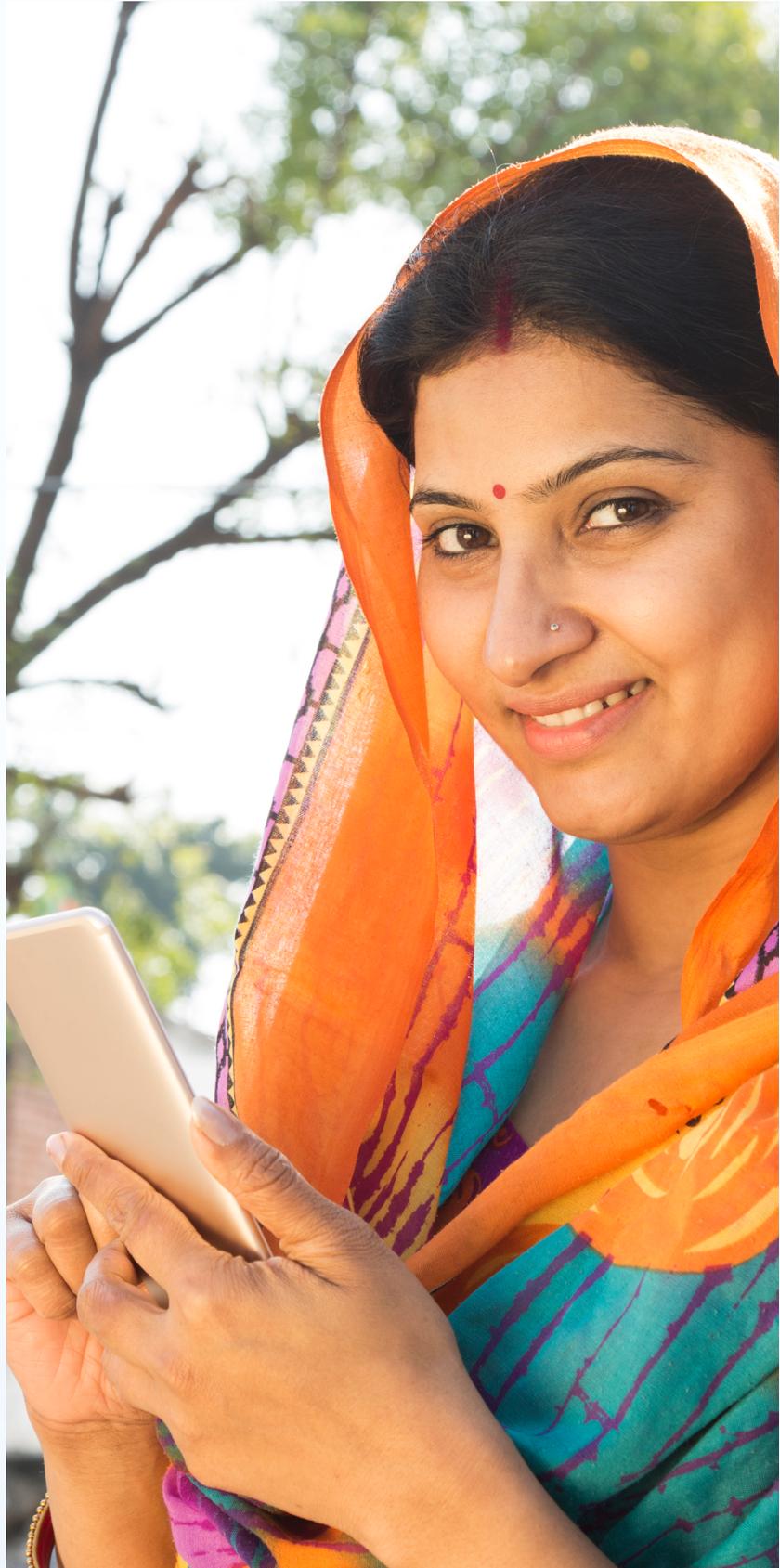
Recommendations

It is recommended that the government can have targeted literacy drives in the identified ~20% districts where 60% of the illiterate population resides, with special drives for female literacy in states with high female to male illiteracy gaps such as Rajasthan, Gujarat, Odisha, Tamil Nadu and Maharashtra.

An online platform for Adult Literacy Programme delivery and monitoring should be developed which enrolls and tracks adult illiterate population throughout the life cycle of becoming literate.

With regards to training, an online Artificial Intelligence (AI) based training system may be put in place to monitor engagement level, provide tailored feedback, evaluation and certification of volunteer as an instructor. With regards to volunteer training programme, Virtual Reality (VR) should be used for simulated and immersive training of volunteers as they vary in training capacity, age and experience. AI based customized content to cater to the needs, interests and learning levels of participants needs to be created. Mobile app for delivering lessons through mobile phones to ensure wider reach of content with flexibility to the learner should be developed. In terms of monitoring and evaluation, it is recommended that literacy levels should be monitored via a mobile app through multi-level awareness and information processing tests in a gamified manner as it improves problem solving and critical life skills in real world.

Also, a demand based guaranteed literacy scheme for adult illiterates should be introduced. The technology could also be used to nudge learners to cultivate habits and attitude for learning. A combination of all these measures shall help India to bring down the illiteracy rate and help in building an educated society which can contribute to this growing economy.





SECTION 01
INTRODUCTION





SECTION 02

ADULT LITERACY IN INDIA CONCEPT & INITIATIVES



Adult Literacy in India – Concept & Initiatives

The concept of adult literacy has evolved over time from basic literacy (reading-writing-arithmetic capability) during pre-independence to a holistic approach of lifelong learning in 5 phases as shown in Figure 2 below:

India has now adopted the definition of literacy as given by the International Literacy Association (ILA) 2021, i.e. “the ability to identify, understand, interpret, create,

compute, and communicate using visual, audible, and digital materials across disciplines and in any context.”⁹

Based on the following adult literacy concepts, several government and non-government initiatives have been implemented to improve adult literacy in India.

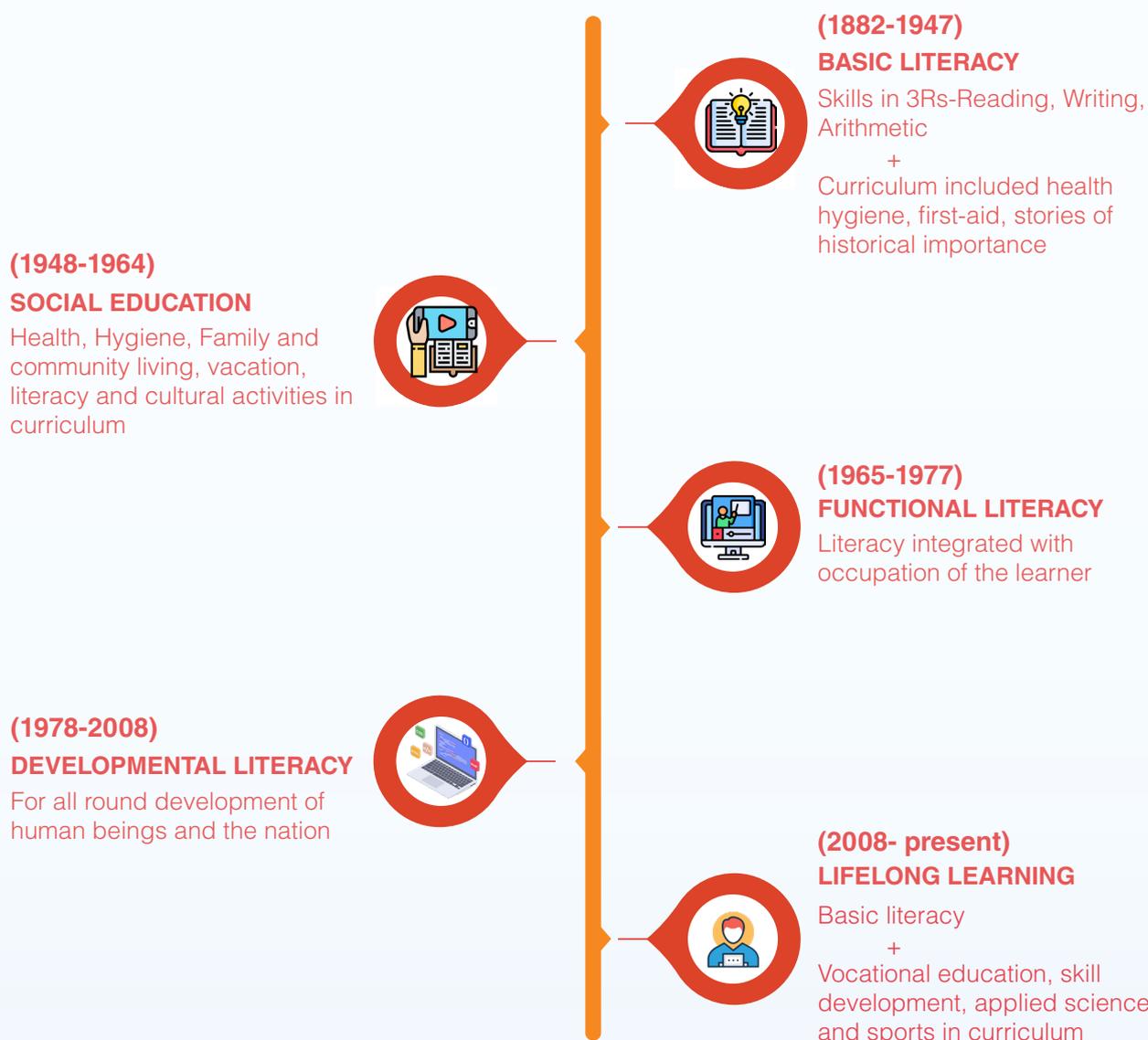


Figure 2: Evolution of Adult Literacy in India (reproduced from e-pathshala module⁸)

⁸https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000573AE/P001684/M020347/ET/1497242573Content_Note_ConceptsofAdultEducationinIndia_ByDr.AshaPatil.pdf

⁹<https://education.rajasthan.gov.in/content/dam/doitassets/education/school%26secondaryeducation/lce/pdf/NILP/Roadmap%20on%20Implementation%20of%20NILP.pdf>

2.1 Government Programmes

In the last 70 years, the Government has introduced several programmes with an aim to improve adult literacy. Some significant adult literacy initiatives of government are depicted in Figure 3 (for details please refer Annexure A). These initiatives had mixed outcomes where some of the programmes like Sakshar Bharat Mission has been able to certify more than 7.64 crore persons as literates.¹⁰

Some of these government initiatives have also made use of technology to support adult literacy programs. These technology adoptions, as summarised in Table 1 (for more details please refer Annexure C), have assisted in implementation of the literacy programmes in the country:

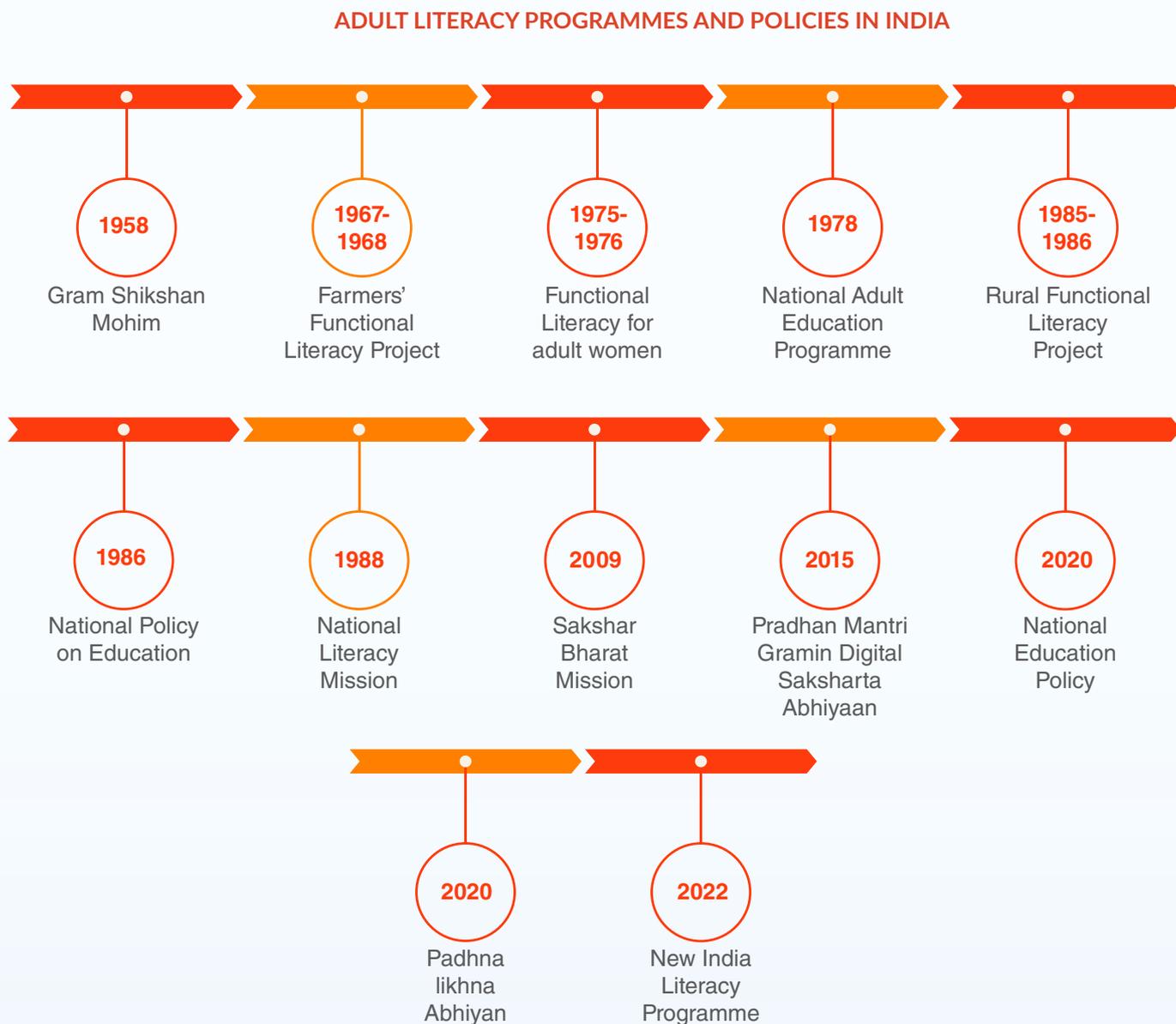


Figure 3: Government Adult Literacy Initiatives (reproduced by author)

¹⁰https://dsel.education.gov.in/adult_education

Building on the previous initiatives, the Ministry of Education in 2022 approved a new scheme named “New India Literacy Program” for the period FYs 2022-27 to cover all the aspects of Adult Literacy (see Box 1 for details) with an aim to align adult literacy with all aspects of National Education Policy 2020. The government has now replaced the term “Adult Education” with ‘Education for All’ which is in line with the SDG 4.

The above signifies that the government has identified the use of technology as an important component to drive the adult literacy initiatives in India. This needs to be further sharpened with use of new technologies like mobile technology and AI based personalised training material for each individual.

2.2 Non-Government Initiatives

The government efforts have been complemented with the initiatives of non-state actors who have also played a significant role in adult literacy. These agencies have also shown reliance on technology and/or media to execute some of the adult literacy programmes in the country which are summarised in Table 2 (for more details refer Annexure B).

Box 1: New India Literacy Program, 2022

About Scheme

- Total outlay is Rs.1037.90 crore for FYs 2022-27 which includes Central share of Rs.700 crore and State share of Rs.337.90 crore respectively.
- Will cover non-literates of the age of 15 years and above in all States/UTs.
- Envisages involvement of school students, pre-service students of Higher Education Institutions (HEIs), school teachers, Anganwadi and ASHA workers.
- School to be the unit for implementation of the scheme.
- Use of ICT and online implementation of the scheme through ‘Online Teaching Learning and Assessment System’ (OTLAS) material and resources through digital modes, viz, TV, radio, cell phone-based free/open-source Apps/portals, etc.

Table 2

Initiative Details	Salient Features
<p>Same Language Subtitling (SLS)- IIM-Ahmedabad+ PlanetRead</p>	<p>It leverages existing mass media platform and subtitling the audio-visual content in the language of audio track in sync. Regular SLS exposure achieves three things at scale: 1) assured reading skill practice and improvement, 2) language learning, and 3) media access among the Deaf and Hard of Hearing (DHH).</p>
<p>Computer Based Functional Literacy (CBFL) Programme – Tata Consultancy Services</p>	<p>CBFL Programme uses multimedia to strengthen adult literacy. It comprises of a multimedia software package and e-Learning system that helps to learn basic reading, writing and arithmetic. The technological mode was opted to eliminate challenges in traditional teaching methodology. It benefitted 15 States in India and Burkina Faso in Africa. In 2000-09, the CBFL-based ALP programme reached more than 1,20,000 people.²¹</p>
<p>Tara Akshar Plus – Development Alternatives</p>	<p>An NLM-accredited initiative that aims to impart foundational literacy to rural and peri-urban women. The program is operationalized through a computer software and takes support of an instructor to impart instructions. It empowers its students by creating awareness about basic healthcare, legal rights and laws, ways they can contribute to the economy and generate income opportunity.²² As on December 31, 2020, the program had reached around 2,48,000+ women in 1900+ villages in 11 states in northern India.²³</p>
<p>Adult Literacy Program for Women – BSES – Reliance Group</p>	<p>The CSR funded programme is carried out in Mahila Shiksha Kendras to empower women to read and write through a six-month computer-based functional literacy course. It has reached approx. 54,097 beneficiaries.²⁴</p>
<p>Adult Literacy & Continuing Education Program – Vikas Shiksha Samiti</p>	<p>The program aims at achieving total literacy for the age group of 15-45 years to achieve transformation in rural areas. It runs for 8 months and takes place in three phases. After a village achieves 100% literacy, a 'Life Skills and Livelihood Skills Training Center' is set up to reinforce the learning of newly literates and to provide them with access to facilities for lifelong learning opportunities.²⁵ The program has covered 167 villages in various phases and has around 47,500 beneficiaries.²⁶</p>

²¹https://g01.tcsion.com/dotcom/ALP/Downloads/CSR_Casestudy_Computer_Based_Functional_Literacy_08_09.pdf

²²<https://taraakshar.org/abouttaraakshar>

²³<https://taraakshar.org/quantativeimpact>

²⁴https://www.bsesdelhi.com/documents/73527/2497782/Press_Release_09Oct18-Eng.pdf

²⁵<https://www.vssgroups.org/adult-literacy-and-continuing-education/>

²⁶<https://www.vssgroups.org/adult-literacy-and-continuing-education/>

Initiative Details	Salient Features
<p>Asia-Pacific Program of Education for All</p>	<p>Learners build their literacy skills with participation in photography; slides are used as a learning material in literacy courses. It supported the development of Community Learning Centers (CLC) and Village Knowledge Centers (VKC), with appropriate ICT enablement.</p>
<p>Bridge to Future Initiative²⁷ - 2007</p>	<p>It is a self- paced, interactive, multimedia based ICT intervention through computers in local language for developing literacy in mother tongue, and basic education. Accelerated rate of learning literacy skills, enhanced youth participation and higher retention observed in an impact assessment study.</p>
<p>Connect to Learn²⁸ -Ericsson</p>	<p>Interactive video conferencing facility with a smart board with recordings and offline materials for augmenting learning with digital elements. Girls (15-25 age bracket) had a significant change in their attitude, behaviour and improvement in grades. Around 15,000 girls accessed age appropriate education over 3 years through ICT enabled knowledge centres.²⁹</p>
<p>Talking Pen - Aadarsh Pvt. Ltd</p>	<p>Talking pen is a multimedia Print Reader' in which when the pen is positioned over a book with MPR codes, it activates the pre-loaded audio files. This education tool caters to needs of the visually challenged, dyslexics as well.</p>

The use of technology in most of the interventions has been primarily aimed at improving the learning experience and effective content delivery to educate adult illiterates. The non-governmental efforts have been limited by the availability of resources, however, they provide good learning.

²⁷https://aladin.uil.unesco.org/paldin/pdf/course01/unit_14.pdf

²⁸https://www.britishcouncil.in/sites/default/files/teaching_and_technology_case_studies_from_india_final_low_res_new.pdf

²⁹<https://www.youtube.com/watch?v=S5T8HDuKzDM>



SECTION 03
CHALLENGES IN ADULT LITERACY



Challenges in Adult Literacy

There has been a continuum of efforts to improve the adult literacy scenario in the country both from government and non-governmental organisations. However, the target of eradicating adult illiteracy has not been achieved as yet. There are multiple factors which impact the initiatives of achieving adult literacy, some of which are summarised as follows. Understanding of these challenges along with ability of new technologies will provide way out for rapid reduction of number of illiterates in the country.

3.1 Challenges in Teaching

A. Geographical Spread

As per Census 2011 India has 25.75 Cr. illiterate population³⁰ in the age group 15+ distributed across the states (Figure 4). While the illiterate in age group 15+ are spread across the country, the large States like Uttar Pradesh (18.74%), Bihar (10.8%), Andhra Pradesh (9.2%), Rajasthan (6.9%) and West Bengal (6.9%) have highest number of illiterate adults. Even inside a State, the spread is not uniform as highlighted below:

1. 536 out of 640 districts (as per 2011 Census) have more than one lakh illiterate people.

2. 182 districts have more than 5 lakh illiterate people.
3. 46 districts (refer Annexure E) have more than 10 Lakh illiterate people (Figure 5). These districts are in Andhra, Eastern UP, and Eastern Bengal region.
4. 38 out of these 46 districts are not covered under the 112 Aspirational Districts in Phase 1 which are expected to be the focus of the New India Literacy Programme, and hence majority of illiterate population do not fall under the target.

The data provides an insight into priority areas for adult literacy program. Targeting 182 districts (which is 28 % of the erstwhile 640 districts in India) would cover 15.2 Cr. (i.e. ~59% of the total illiterate population (25 Cr.) of India. Further, according to reports from Government of India, the present average of adult illiterates taught by instructors is around 10 and on considering 200 adult illiterates taught per year by an instructor for 5 years, there would be requirement for a dedicated force of more than 2.5 Lakh instructors.³¹ Getting so many trained resources spread across the country is very difficult and that brings out the need to adopt technology as force-multiplier for improving the literacy levels in the country.

STATE WISE PROPORTION OF ILLITERATE POPULATION IN INDIA (%)

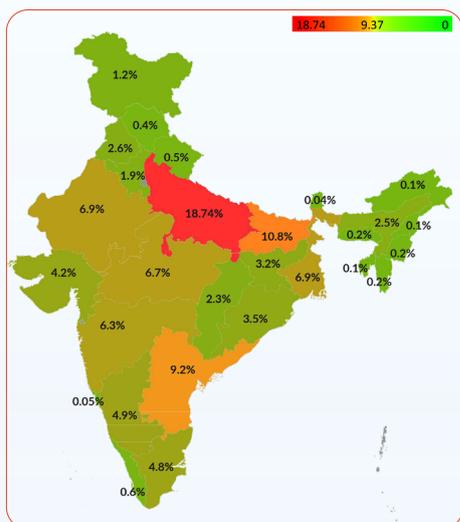


Figure 4: State-wise proportion of adult illiterate population (in %) for 15+ age group as per Census 2011(referred in Padhna Likhna Abhiyan Guidelines, 2020) , (2011 state boundary represented using Gramener)

ILLITERATE POPULATION-WISE (5L+) DISTRICTS

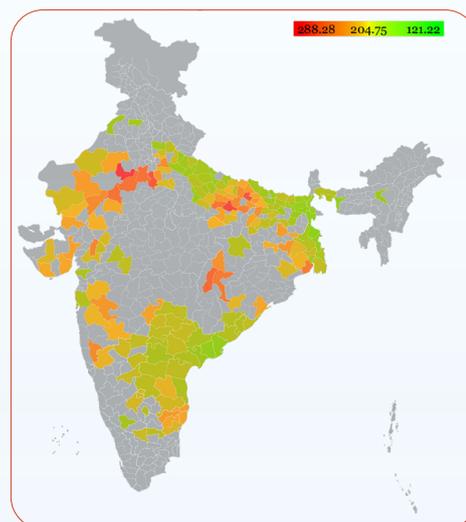


Figure 5: 182 districts with adult illiterate population (in %) of more than 5 lakh for 15+ age group as per Census 2011(referred in Padhna Likhna Abhiyan Guidelines, 2020)

³⁰<https://dsel.education.gov.in/sites/default/files/2020-05/PLA-Guidelines.pdf>

³¹August 2016, Personal Communication, State Resource Center Director, Telangana, India under the programme of "Each one, teach ten"; <https://arxiv.org/ftp/arxiv/papers/1802/1802.05173.pdf>

B. Gender Disparity

The female to male illiterate population ratio (%) across many states is alarming and highlights the gender disparity. In some States, for every 100 male illiterates, there are around 200+ illiterate women. On average across all states, there are 181 illiterate women per 100 illiterate men (Figures 6). This disparity is more pronounced in the regions of Northern Rajasthan, Eastern Uttar Pradesh and Northern Chhattisgarh (Figure 7).

Since women constitute larger part of illiterate population, it is imperative to understand challenges faced by them to suggest use of appropriate technology. These include challenges arising from the personal constructs (financial problems, lack of ambition, family responsibilities), family constructs (negative parental attitude), societal constructs (societal attitude) and lack of infrastructure enabling female literacy (lack of female teachers, unavailability of conveyance, no school in village). Therefore, an approach which provides learning easily accessible, affordable, effective, contextual and

available in a format on a device easily accessible to them is required.

C. Learner Diversity

The abilities of adults who enrol themselves into adult literacy programs span a wide range, from conversational native-language skills, to preliminary literacy skills, to functional literacy skills. Stemming from these unique characteristics are learners' diverse needs and requirements. Diversity in adult education means addressing unique issues and meeting specific instructional metrics and goals.

Also, there is an urban-rural divide in adult literacy, with large differences in the literacy outcomes between the urban and rural sectors. Socio-economic factors also play a role in literacy levels with subgroup of Urban-Male-Other caste demonstrating the highest level of literacy and the Rural-Female-SC/STs demonstrating the lowest level of literacy.³²

STATE WISE FEMALE TO MALE RATIO PERCENTAGE OF ILLITERATE POPULATION IN INDIA (75 LAKH +)

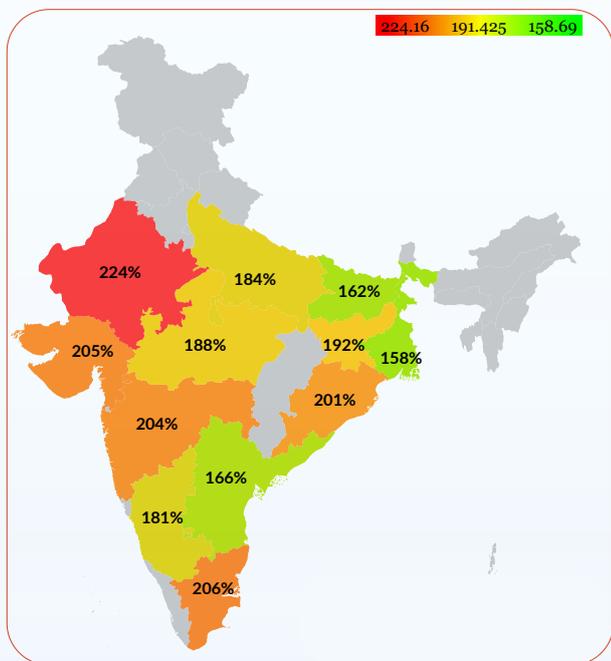


Figure 6: Female to Male illiterate population (in %) for 15+ age group as per Census 2011(referred in Padhna Likhna Abhiyan Guidelines, 2020)

ILLITERATE POPULATION-DIST. WISE(5L+)

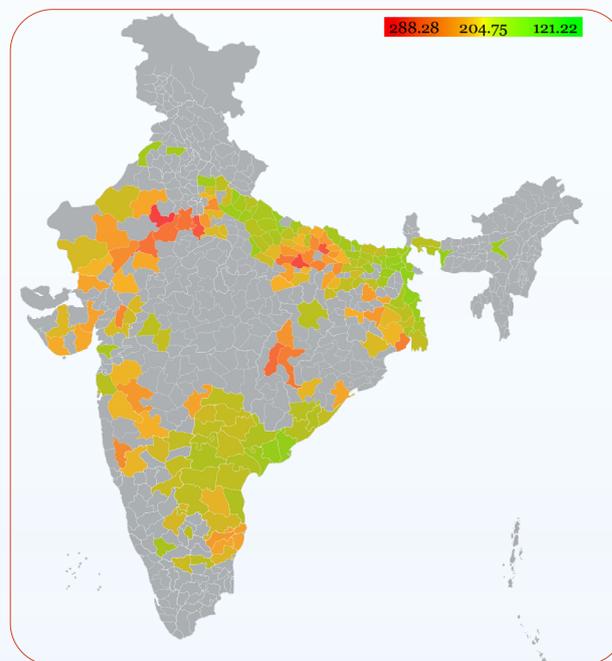


Figure 7: Districts with high Female to Male illiterate population (in %) for 15+ age group as per Census 2011(referred in Padhna Likhna Abhiyan Guidelines, 2020)

³²<https://www.epw.in/journal/2019/48/special-articles/literacy-achievement-india.html>

D. Lack of Mobilization

It is critical for the success of any adult literacy programme to create an environment of accurate dissemination of information, mobilize volunteers and seek community participation. Many interested learners are not aware of the existence of the adult literacy centres or the available programmes. Some of the significant reasons for dropping out of adult literacy programs are lack of interest, lack of motivation, lack of employment generating capability of the programme, and non-continuous programs which lead to timing incompatibility for the adult learners.³³ The programme construct must address all such issues so as to garner adequate participation during the mobilisation drive and facilitate continuous engagement during the training period.

Uganda reported progress in improving quality in adult literacy by relating literacy and numeracy knowledge and skills to the specific context, needs and interests of communities.³⁴ There are deliberate efforts by partners to mobilize various kinds of participation in adult literacy programs at all levels of implementation that involve different government departments. This approach promotes local community resource contribution in addition to financial support from different government departments.

India had shifted its approach from mobilization to managerial in the past but the new NILP programme has again put the focus back on mobilization. The mobilization has to be a continuous engagement model for life-long learning experiences. New technologies, specially mobile with AI makes it possible to mobilize and enthuse people where targeting individuals with appropriate content and messages is possible and predict in advance who may drop out so that preventive steps are taken in time.

E. Vocational and Need-based Curriculum

One of the biggest challenges to participation of adults in literacy programmes is limited utility or relevance in the content for better employment or skills. Literacy programs are devoid of skill development and personality development facets. Learners also report that the content is not aligned to their economic needs.³⁵ Further, there is a universal content approach adopted to carry out literacy drives which limits the continued engagement of different age and strata of adult illiterates.

Oxenham et al describe in their paper how participant observation groups are first taught skills that help their work, and they may progress to literacy only when they decide that they need it (an approach called “literacy second”).³⁶

Adult literacy programs such as the Farmers’ Functional Literacy Project succeeded because curriculum of language and numerical skills in functional literacy was related to practical agricultural production. Instructions are given in 11 local languages and received a greater farmer response due to its immediate use value.³⁷

With the expansion of adult education programmes efforts have been made to decentralize the process of implementation, with schools being defined as the unit of implementation. In the field of materials preparation also, decentralization is essential, because the materials have to be locally relevant and have to suit the needs, interests and requirements of the learners. It has been observed that such a decentralization has not been achieved although the efforts are continuing in that direction.³⁸

AI based content delivery platform assesses the status of each individual and based on progress made and interest of the individual, provides content suiting to

³³Measuring Effectiveness of Adult Literacy Program in India S. B. Joshi, N. S. Bohra (2019)

³⁴<https://unesdoc.unesco.org/ark:/48223/pf0000381666/PDF/381666eng.pdf.multi>

³⁵Measuring Effectiveness of Adult Literacy Program in India S. B. Joshi, N. S. Bohra (2019)

³⁶Oxenham, John and Aya Aoki. 2002. Including the 900 Million. Washington, DC: World Bank (draft).

³⁷Farmers’ Functional Literacy Project

³⁸Mullikottu-Veetil Mukundan, & Bray, M. (2004). The Decentralisation of Education in Kerala State, India: Rhetoric and Reality. *International Review of Education / Internationale Zeitschrift Für Erziehungswissenschaft / Revue Internationale de l’Education*, 50(3/4), 223–243. <http://www.jstor.org/stable/4151597>

each individual. It also cajoles users, awards them for good work and thus encourages them to learn. Adding content which can lead to relevant skills can also be done by AI based programs.

F. Limited Financial Resources

The 'United Nations Learning decade's' International Strategic Framework for Action document (2009) recommended for states to benchmark 3% of their national budget to youth and adult literacy, while calling for an increased allocation of external aid to literacy – stating that states often allocate as low as 1% of national budgets on adult learning.

In India, the government expenditure on adult education has reduced by 90%, from 4.18% of education budget i.e. 1300 Cr.(2010-11) to less than 0.5% of education

budget i.e. 127 Cr.(2022-23) amidst rising population and stagnating levels of literacy in India. The budgetary allocation for adult education was drastically reduced from Rs 250 crore in 2021-22 to Rs 127 crore in 2022-23. This is a major constrain as adult literacy drives require financial resources for mobilization, content creation, training and dissemination. Potentially, such resource limit can have a two-tiered impact on the sector:

- a. lack of channelized funds to appropriately implement education schemes across the country to achieve some degree of success, and
- b. the inability to provide financial incentives for on-ground workers and teachers employed under these schemes.

Adult Education Budget Allocation (in INR Crores)

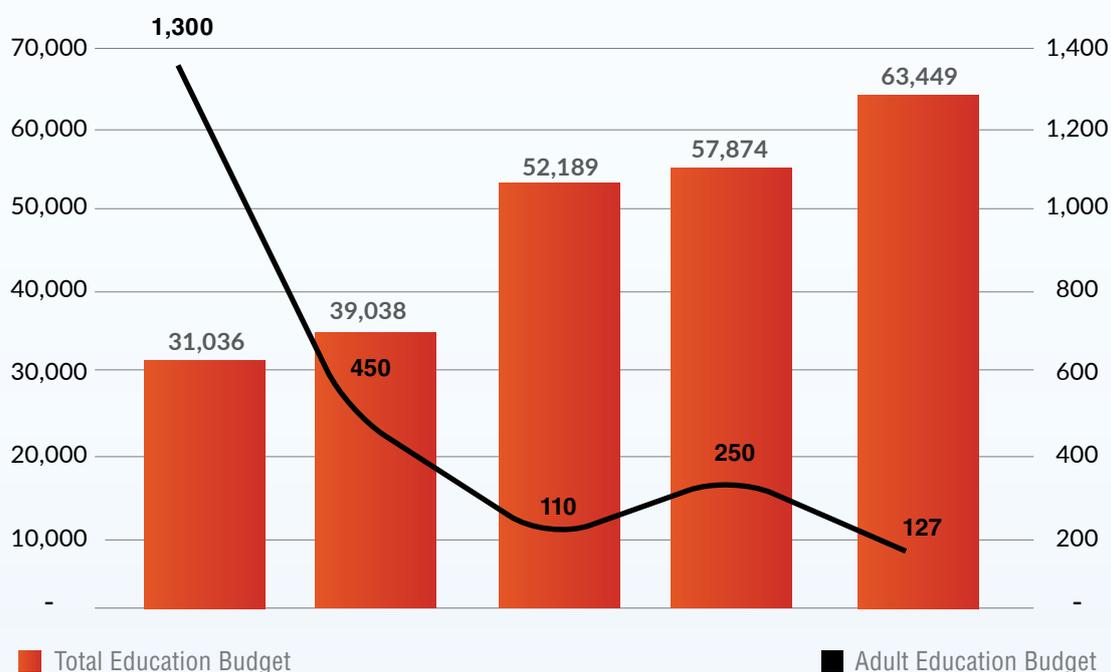


Figure 8: Budget allocated for Adult Education with respect to Total Budget allocation for Education

The lack of a dedicated and substantial budget for adult education in the country may make it difficult to tackle the problem effectively. However, even where funds are allocated, the trend of allocation and utilization of funds by the Centre for adult education reveals that there has been fluctuations in utilization of entire sanctioned amount for adult education during different Five-Year Plans. In several Plan periods, significant underutilization can be noticed. For instance, while 90% of the allocated funds (for special projects on eradication of illiteracy) were utilized during the 8th five-year plan, whereas only 75% of the funds allocated in the 9th five-year plan could be utilized.³⁹

G. Accessibility and Digital Divide

In the pre-pandemic period, there was a large urban-rural divide in internet access. However, as per a 2022 report by Nielsen, India has 646 million active internet users of which 352 million users belong to the rural population, almost 20% more than the urban population. But, in this increased rural internet users, only 1 in every 3 female internet users in rural India actively uses the internet, showing a gendered divide in access to internet.⁴⁰

Reduced cost of mobile phones coupled with affordable data prices offered by leading telecom companies, the internet is now omnipresent in the country.⁴¹ This has led to the growth in use of technology and digital media to improve methods used in the adult literacy market. However, the costs of personal computers and laptops are still very high, making technology-based solutions in adult literacy still difficult to access. However, the silver lining is mobile based applications which can be accessed by everyone, maintaining privacy and thus an ideal candidate for innovative solutions for adult illiterates.

3.2 Challenges in Training

Adult literacy educators are key to ensuring literacy teaching and learning of good quality.⁴² Despite the crucial role youth and adult literacy educators' play, they find themselves in the most precarious position of any group of educators. They receive much less policy attention as compared to school teachers. In addition,

literacy educators are among the lowest paid teachers and receive the least training.

While the NILP states that volunteers will undergo training prior to interaction with the students, as of today, there is no clarity on remuneration. Any lack in adequate remuneration shall not motivate training staff adequate enough to bring in professionalism for literacy drives and make the entire effort more transactional. Therefore, there is a need to create a dedicated 'paid' workforce which is completely engaged with the illiterate population over a period of time and handholds them for gradually improving their literacy levels.

3.3 Challenges in Monitoring & Evaluation

Census of India, which is conducted once in 10 years, is the primary mode of calculating literacy rates. Besides, some sample surveys also provide data for calculation of literacy rates. The key challenges in monitoring the literacy programme are – reliability and credibility of the reported data, inadequacy of the trained personnel, weak supervision, lack of two-way flow of monitoring and feedback.

There have been initiatives taken in past by the Government to monitor programme implementation like Web Based Planning & Monitoring Information System (WePMIS) under Sakshar Bharat Mission. However, in order to have a complete picture of the adult literacy initiatives, it is important to have single platform which has comprehensive and timely information on the illiterate population, growing level of literacy, volunteers and other stakeholders' performance and actual utilisation of fund allocated so that required timely interventions can be initiated. The reporting is more focussed on generating MIS related to numbers which does not reflect the ground realities and does not provide any feedback or actionable information for course corrections. Data Analytics and Machine Learning based tools can be used to analyse the data and provide better and timely insight into what is working and what is not. Such insights will be more near real time, which in turn will enable corrective action.

³⁹https://www.academia.edu/3424810/Funding_Adult_Education_Programmes_in_India_A_Study_of_Policy_Process_Pattern_and_Problems

⁴⁰<https://www.nielsen.com/news-center/2022/niensens-bharat-2-0-study-reveals-a-45-growth-in-active-internet-users-in-rural-india-since-2019/>

⁴¹<https://www.cable.co.uk/mobiles/worldwide-data-pricing/#map>

⁴²<https://unesdoc.unesco.org/ark:/48223/pf0000374746>



SECTION 04

GLOBAL BEST PRACTICES

Global Best Practices

Technology enabled interventions can help in better monitoring of literacy programme in terms of reliable and credible reporting of data, training of personnel, close supervision, near real time two-way flow of feedback, person specific learning material and fill the large gap in demand and supply of teaching workforce for andragogical literacy. Some of the global technology enabled initiatives are as follows:

Technology	Brief
<p>Artificial Intelligence for Gamification</p>  <p>USA (2007)</p>	<ul style="list-style-type: none"> Simulation with Intelligent Tutoring systems⁴³ like Tactical Iraqi⁴⁴ ; Second Life in a role playing environment tailoring to the emotional and engagement levels. It was useful in language literacy, culture and non-verbal communication training.
<p>Virtual Reality (VR) for Teacher Training</p>  <p>Myanmar⁴⁵⁻⁴⁶ (2015)</p>	<ul style="list-style-type: none"> VR training tool with cloud based modules designed for teachers to practice methods of learner-centric teaching. Teachers practicing using VR classroom before delivering the first class benefited with simulated training.
<p>Radio Technology- for Distance Learning</p>  <p>Cape Verde⁴⁷ (2002)</p>	<ul style="list-style-type: none"> Synchronized use of three elements: print materials, radio classes and orientation tutorials for adult literacy, secondary education etc. 25 courses developed and more than 20,000 certificates issued to out of school youths and adults.⁴⁸
<p>ICT Blended Learning on Mobile</p>  <p>Commonwealth⁴⁹ (2005)</p>	<ul style="list-style-type: none"> Voice messages through mobile phones are used for distance learnings, financial literacy etc. Cost of capacity building using open distance and blended learning was six times lower than the conventional face-to-face training.⁵⁰
<p>Mobile Literacy+ SMS Technology</p>  <p>Afghanistan⁵¹ (2006)</p>	<ul style="list-style-type: none"> Literacy lessons were reinforced with the help of mobiles. Assignments were shared to learner using SMS to enable writing skills, critical thinking. 83% of mobile literate students were able to complete basic and advance to higher level of literacy. 1,750 messages were sent per day on average by a learner for assignments and peer communication.

⁴³<https://nap.nationalacademies.org/read/13469/chapter/6#28>

⁴⁴<http://sgschallenge.com/tactical-iraqi-3/#:~:text=Description%3A%20Tactical%20Iraqi%20is%20a,common%2C%20everyday%20situations%20and%20tasks.>

⁴⁵<https://www.ericsson.com/en/blog/2016/9/on-a-journey-with-connect-to-learn-in-myanmar>

⁴⁶<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/distance-learning-adults-radio-ecca-project-socio>

⁴⁷ <https://uil.unesco.org/case-study/effective-practices-database-litbase-0/distance-learning-adults-radio-ecca-project-socio>

⁴⁸ <https://www.col.org/skills/lifelong-learning-for-farmers/>

⁴⁹ <https://www.col.org/skills/lifelong-learning-for-farmers/>

⁵⁰<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/mobile-literacy-programme-afghanistan-afghanistan>

⁵¹<https://files.eric.ed.gov/fulltext/ED573633.pdf>

Technology	Brief
<p>Mobile Technology-ABC Programme</p>  <p>Niger⁵² (2008)</p>	<ul style="list-style-type: none"> • Integration of phone based literacy and numeracy modules into a conventional adult literacy course. • ABC programme spread to more than 400 villages in Niger in three years.⁵³
<p>ICT Software</p>  <p>Kenya⁵⁴ (2010)</p>	<ul style="list-style-type: none"> • Creation of interactive e-learning content delivered through customized laptops for basic literacy and other subjects to Self Help Groups. • Cheaper laptops (approx. USD 200 per unit) made the programme more accessible and affordable.
<p>Software Programme</p>  <p>Lebanon⁵⁵</p>	<ul style="list-style-type: none"> • Interactive, self-paced learning which teaches to read, write and count in an interactive way with computer-based images, sounds and text. • The project demonstrated that the expertise of traditional literacy programmes workers can be used in ICT-based literacy training.
<p>Gamification with Immersive Environment</p>  <p>Germany⁵⁶</p>	<ul style="list-style-type: none"> • A computer game called Winterfest brings technology aided literacy courses by providing a setting for participants to look at a situation from multiple perspectives.
<p>Mobile+ SMS + Web</p>  <p>Brazil⁵⁷ (2011)</p>	<ul style="list-style-type: none"> • It delivers sounds, letters, pictures and numbers through a mobile device with activities to impart literacy learning and boost cognitive understanding. • Higher class attendance (absenteeism fell by 50%); Learnings outside the classroom and the use of technology outside of the learning session also increased.
<p>ICT</p>  <p>Senegal⁵⁸ (2012)</p>	<ul style="list-style-type: none"> • Mobile, TV and online software approach is used for developing basic literacy skills, and nutrition, health, the environmental learnings. • One of the program's findings was that the desire to read and write text messages is a major motivating factor in engaging girls and women in literacy learning.
<p>Mobile Application- Maggi Mammies Digital Literacy Project⁵⁹</p>  <p>Ivory Coast (2017)</p>	<ul style="list-style-type: none"> • Smartphone and application based, self-paced literacy for illiterate women who learn of critical skills in reading, arithmetic and digital literacy. • 65% of the participating women could read, write and count at different level of proficiency.

⁵²<https://files.eric.ed.gov/fulltext/ED573633.pdf>

⁵³<https://files.eric.ed.gov/fulltext/ED573633.pdf>

⁵⁴<https://files.eric.ed.gov/fulltext/ED573633.pdf>

⁵⁵<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/adult-literacy-using-information-technology>

⁵⁶https://www.ijntr.org/download_data/IJNTR03080011.pdf

⁵⁷<https://files.eric.ed.gov/fulltext/ED573633.pdf>

⁵⁸<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/literacy-project-girls-and-women-using-icts>

⁵⁹<https://www.nestle-cwa.com/en/media/newsandfeatures/partnership-to-improve-women-livelihood>

Technology	Brief
<p data-bbox="204 237 405 297">Blended learning VHS Lernportal</p>  <p data-bbox="197 398 411 427">Germany⁶⁰ (2020)</p>	<ul data-bbox="512 210 1430 450" style="list-style-type: none"> • A portal for online literacy course usable in either self-study mode or as a teaching tool. Portal is available on social media for a blended learning approach. • By 2020, approximately 26,000 teachers and 500,000 learners were portal users. Its curriculum is accessible to 900 adult education centres across Germany.⁶¹

Lessons from international experience could be summarised in terms of the following:

For users (learners):

- a) Content development:
- i. Which is relevant for the target group, in terms of skills/employability, getting developed which will bring better jobs or financial literacy and thus reduced dependence on others etc.
 - ii. Which can be consumed as part of day-to-day activities.
 - iii. Which is in mother tongue.
 - iv. Gamified to encourage users to complete the module quickly.
 - v. Content which is interactive, self-paced which teaches to read, write and count in an interactive way with mobile phone/computer-based images, sounds and text. (Tool like WhatsApp can bring interactivity as well as functional literacy)

b) Content delivery mode:

- i. which is user-friendly,
- ii. easily accessible,
- iii. less costly,
- iv. can be used in privacy without help of someone else.

Mobile phone and TV fulfil all the above needs.

- c) Personalized content delivery based on pace of the learner and keeping track of the progress to ensure that learner does not drop out.

For trainers/facilitators:

- i. Online courses for trainers to be used in self-service mode or a teaching tool.
- ii. Use of technologies like AR/VR for better learning of the facilitators: VR training tool with cloud based modules designed for teachers to practice methods of learner-centric teaching.
- iii. Teachers practicing using VR classroom before delivering the first class (simulated training)
- iv. Refresher courses for facilitators delivered through ICT tools or Tech Platforms.

⁶⁰<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/vhs-lernportal-germany>

⁶¹<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/vhs-lernportal-germany>



SECTION 05
RECOMMENDATIONS

Recommendations

The key recommendations that will help to achieve intended levels of adult literacy in India are: -

GOVT. POLICY RELATED

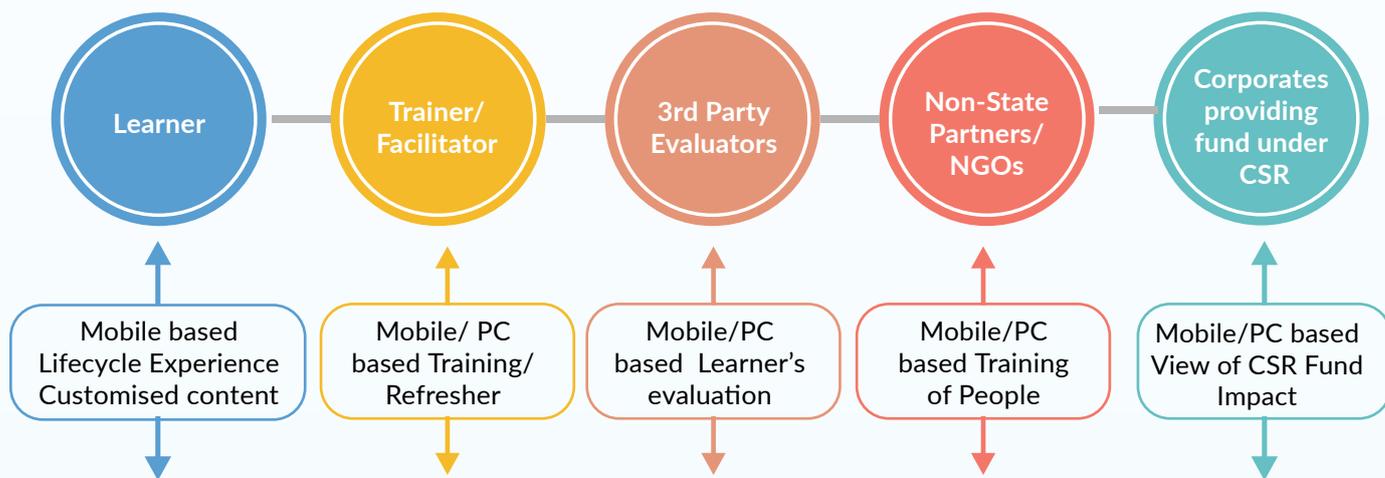
I. Targeted Literacy Drives - As per Census 2011, around 60% of the illiterate population reside in around 20% of the districts, many of which are not Aspirational Districts as notified by NITI Aayog. Therefore, in order to bring down the adult illiteracy rate a targeted approach should be adopted to provide interventions in the top 182 districts (refer Annexure F) with high illiteracy which shall cover ~60% of the total illiterate population in India. Out of these 182 districts, the first focus should be on the 46 districts which each have 10 Lakh+ illiterates (refer Annexure E).

Special drives for improving female literacy in the states with relatively high female to male illiteracy gaps such as

Rajasthan, Gujarat, Odisha, Tamil Nadu, and Maharashtra are recommended.

II. Online Platform for Adult Literacy Programme Delivery and Monitoring:

A dedicated and online comprehensive technology platform should be developed which enrolls and tracks adult illiterate population through the life cycle of becoming literate. It can also be used to provide incentives to people acquire literacy under the targeted programmes. Apart from this, the platform can also be used to on-board other stakeholders like NGOs, training organizations, organizations providing CSR to have comprehensive view of the efforts being undertaken for eradication of illiteracy.



AI ENABLED TECH PLATFORM

- Life cycle management of learners
- Enrolment of learners
- Progress of learners
- Customised content as per pace and interest area
- Gamified content

- Allocation of trainer
- Training of trainers
- Output management

- Evaluation of content
- Evaluation of learning

- One view of end-to-end operation of program and its effectiveness
- Dashboard showing major KPIs

[Government will also get this view]

- View of Dashboard and major KPIs
- Outcome vis-à-vis the money spent

This shall also provide government the mechanism to accelerate adult literacy initiatives by incentivizing outcomes of governmental and non-governmental players serving the unserved regions/focus regions, implement innovative and scalable solutions to improve adult illiteracy.

The portal should also serve as a knowledge network for synergy, policy advocacy, stakeholder participation, standardization, monitoring and effective implementation through a gamut of activities like research, survey, deliberation and discussion with the help of government support.

The enrolment on the tech platform will have to be very easy using mobile phone and one of the identity documents issued by the Government. The ask during registration should be limited to 2 or 3 questions and upon registration, image based OTP may be sent to confirm registration. The interactive engagement should start from there itself.

Advanced technology like AI can also be used to build 'gamified' assessment model which not only performs the baseline assessment to determine the level of literacy but also provides a continued assessment and certification of the level of literacy. A baseline survey would collect this data and ensure that the content is tailored to the individual learner's needs and pace. Technology can also be leveraged to provide additional lessons if a learner's progress does not meet learning outcomes will help to make the content accessible for learners. This shall also help in continuous engagement with the participant as it shall induce sense of achievement on everyday basis.

III. Targeted Media Campaigns – Technology can be used to create segmented social media campaigns and can further be refined using sentiment analysis. The major aim of technology shall be to drive awareness and catalyse participation in the literacy programmes on messenger platform like WhatsApp, Koo, Telegram etc. and on social media platform like Instagram, YouTube etc.

IV. Increase budget allocation on adult literacy - The fund allocation needs to be increased at the level it used to be earlier (~4-5%) to give a big push to this program. The allocation to States could be based on the assessment of adult illiterate population in each State/ UT. The technical platform used to enrol people can provide estimates for provision of the required funds which can be allocated and the utilisation of the fund can also be tracked using the technology platform.

Further, concerted efforts to pool resources by state and non-state actors can be achieved by co-ordination action among civil society actors, corporate social responsibility interests and the state/ central resources.

Recommendations on components of training, teaching, monitoring and evaluation to address the illiteracy challenges in the country:

A. Training

- a. **Intelligent online training systems:** To train large group of volunteers as being planned under the New India Literacy Programme, an online Artificial Intelligence based training system may be put in place. The online system should monitor emotional engagement level of volunteers with features like tailored feedback, evaluation and certification of the volunteer as an instructor. Such artificial intelligence enabled system will also provide uniformity in training and content in optimized time across India. It shall also help in identification of less effective trainers who can either be put through refresher trainings or may be taken out of the system.
- b. **Use Virtual Reality (VR) in teacher training programmes:** The volunteers vary in training capacity, age and experience. For simulated and immersive training of volunteers in imparting situational instruction, blended training and management of adult learning environment, VR courses should be designed as part of training programme, which are downloadable from a cloud based server, training performance are recorded and accessible on the cloud for self-improvement. This shall enable self-paced, active mode of virtual training and benefit the teachers in improving teaching methodology through practice and develop student centred teaching.⁶²
- c. **Mobile App for Adult Literacy Training:** Adult literacy training modules can be developed and provided to volunteers through a mobile app to ensure accessibility and awareness of literacy campaign with ease of participation among volunteers.

B. Teaching

- a. **AI based Customised Content:** Leverage technology to customise adult learning content to the specific needs, interests and learning levels of the adult literacy participants.
- b. **Mobile App for Learning:** Delivering lessons through mobile phones, will ensure wide reach of the content, reduce the intensity of the engagement of trainers with the adult learners and shall also help in continued engagement. The availability of the content through this mode will also provide flexibility to the learners to learn at the time that is best suited for them.
- c. **Enabling multi-channel learning with Same Language Subtitling (SLS):** Fast tracked SLS technology integration in Television and OTT will allow self-paced learning for adults. SLS should be made mandatory for all entertainment contents on TV and OTT.
- d. **Introduce Text-to-speech modules for SMS in feature phones⁶³** -To use mobile based literacy initiative and bring cognitive learning, develop long term reading and orthography, even basic/feature phones have integrated text to voice features which could be leveraged to develop text reading capability. For developing this capability in multiple languages, the mobile phone firms can develop local language based applications.⁶⁴

⁶²<https://www.ericsson.com/en/blog/2019/2/connect-to-learn-vr-in-the-classroom>

⁶³https://www.nokia.com/phones/en_in/support/nokia-110-4g-user-guide/accessibility

⁶⁴https://www.business-standard.com/article/companies/karbons-mobiles-to-launch-apps-in-local-languages-115071501096_1.html

C. Monitoring and Evaluation

- a. **Technology solution to measure literacy level:** Problem solving is globally accepted as the norm for measuring adult skills in literacy. It is also proven that awareness improves problem solving performance.⁶⁵ Therefore, the Mobile App can also be used to measure literacy level through information processing and problem solving skill in critical life skills. Hence the evaluations at baseline and post adult literacy programs should include the awareness levels in 'critical life skill' (including financial literacy, commercial skills, health care and awareness, child care and education, and family welfare) via multi-level awareness test. This is to not only measure critical life skills but also its utility in information processing and problem solving in real world scenario. This can be delivered in an interactive gamified way to encourage users by awarding them for correct answers.
- b. **Introduce Demand based Guaranteed Literacy Scheme for adult illiterates-** The metric for evaluation can be based on the outcome of participation like Learning by Doing (LbD) activities, performance in assessment scores etc.
- c. **Use of technology** to nudge learners if they have not logged into the system for a prolonged period, will help to cultivate new habits and attitudes to learning. Nudges that convey that the neighbouring village panchayat is closer to achieving 100% literacy will also provide motivations for consistent engagement with the content.
- d. **Provide volunteers with monetary incentives** based on online monitoring of their performance so that they are enticed to cover a large population and enable more participants to be certified as literates. The incentives can be monthly, which comprises of fixed and variable components. The variable component can be linked to pass percentile of the illiterate people being trained by them in an independently conducted test.

⁶⁵https://www.researchgate.net/publication/316955374_Awareness_improves_problem-solving_performance

Government Literacy Programmes

Year	Name of the Program	Objectives/Target Audience
1958	Gram Shikshan Mohim	<ul style="list-style-type: none"> • Originated in a district in Maharashtra. • Worked on the principles of retention and enrichment of literacy in addition to eradication of illiteracy.
1967-68	Farmers' Functional Literacy Project	<ul style="list-style-type: none"> • Improve the lives of men and women in rural areas by enabling socio-economic changes with particular emphasis on changes in agricultural production with increasing the attainment and use of literacy skills.
1975-76	Functional Literacy for Adult Women	
1985-86	Rural Functional Literacy Project (RFLP)	
1978	National Adult Education Programme (NAEP)	<ul style="list-style-type: none"> • Taken up at a macro-level to eradicate illiteracy through project approach. • Aimed at educating 10 Crores non-literate adults in the age-group of 15-35 years within a time frame of five years.
1986	National Policy on Education	<ul style="list-style-type: none"> • Recognized the need for a time bound planned and coordinated effort for the eradication of adult illiteracy. • Envisioned measures to widen the scope of adult education and award priority to socio-economically disadvantaged groups of the society. • Emphasized on expansion of non-formal and need based vocational education for neo-literates, school dropouts and adults; provision of non-formal vocational education and training for workers of the unorganized sector through the existing institutions and agencies.
1988	National Literacy Mission	<ul style="list-style-type: none"> • Found its origin as one of the three programs implemented under the NPE.⁶⁶ • Target - Impart functional literacy to 8 Crores illiterate persons in 15-35 age groups – 3 Crores by 1990 and an additional 5 Crores by 1995.
2009	Sakshar Bharat Mission	<ul style="list-style-type: none"> • Objectives were to provide functional literacy, skill development and continuing education for neo-literates, • Highlighted the need for increase in female literacy. • Focus was to reduce gender disparity and thereby achieve the government's target of 80% national literacy.

⁶⁶National Policy on Education - 1986 and the Revised Plan of Action - 1992 gave an unqualified priority to the following three programmes for eradication of illiteracy:

(a) Universalisation of Elementary Education and universal retention of children upto 14 years of age.

(b) Systematic programme of non-formal education in the educationally backward states.

(c) National Literacy Mission to impart functional literacy to adults in the age-group of 15 - 35 years.

Year	Name of the Program	Objectives/Target Audience
2015	Pradhan Mantri Gramin Digital Saksharta Abhiyaan	<ul style="list-style-type: none"> • Aimed at transforming the country into a digitally empowered society and a knowledge economy. • It envisioned three-layered transformation – digital infrastructure as a utility to every citizen, existence of governance and services on demand, and digital empowerment of citizens.⁶⁷ • Aimed to empower citizens in rural areas by training one person from every eligible rural household to operate computers or tablets/phones, send and receive e-mails and perform basic functions using digital devices.
2020	National Education Policy	<ul style="list-style-type: none"> • Recommends strong and innovative government initiatives for adult education -in particular, to facilitate community involvement and the smooth and beneficial integration of technology to expedite the aim of achieving 100% literacy. • Also recommended five components of Adult Education comprising foundational literacy, critical life skills, vocational skills, basic education and continuing education.
2020	Padhna Likhna Abhiyan	<ul style="list-style-type: none"> • To impart Functional Literacy to 57 lakh non-literates of 15 years and above age group in the country. • Technology component of the scheme envisages use of e-material, mobile app and several other resources. • Term ‘Education for All’ as opposed to the previously used ‘Adult Education’ introduced as the latter terminology was not applicable to non-literates aged 15 and above

Non-Government Literacy Initiatives

I. Same Language Subtitling⁶⁸ - IIM-Ahmedabad+ PlanetRead

Same Language Subtitling (SLS) leverages existing mass media platform and subtitling the audio-visual content in the language of audio track in sync. Since 1999 weekly telecast of Chitrageet- a Gujarati film song –is being subtitled in Gujarati. In 2010, Chitrahaar, a DD National film song program started using same language subtitling where Hindi subtitles of the song’s lyrics scrolled across the screen.

SLS of audio-visual content creates a steady stream of consistent grapheme-phoneme associations in the brain that already knows the language and letter-sound correspondence. Exposure to SLS on TV, only for 30 min per week over a six-month period, led to measurable improvement in reading skills among adults in India (Kothari et al. 2004).

SLS programme benefits women in particular, which formed large segment of early literates. SLS offered people the option to use reading skills on a daily basis. Regular SLS exposure achieves three things at scale: 1) assured reading skill practice and improvement, 2) language learning, and 3) media access among the Deaf and Hard of Hearing (DHH).

In a research article to access the effects of SLS on literacy, and it was found over nearly 5 years, with no exposure to SLS, i.e., in the Low-SLS group, 6.1% of adults (15+) transitioned from unable to read a newspaper to reading one at least once a week. SLS exposure transitioned 11.2% more adults (15+) to reading a newspaper at least once a week. Daily newspaper reading went up by 2.1% in the Low-SLS group and by 15.6% in the High-SLS group.

In 2019, Ministry of Information and Broadcasting announced a set of Accessibility Standards that require

all major TV channels (around 900) to provide same language subtitling in at least one program per week in 2019 and to ramp up captioning to 50 percent of all TV programming by 2025.

II. Adult Literacy Program (ALP) - Tata Consultancy Services

The Computer Based Functional Literacy (CBFL) Programme was initiated in 2000 by Tata Consultancy Services (TCS) with the objective of using multimedia to strengthen adult literacy. It comprises of a multimedia software package and e-Learning system that helps to learn basic reading, writing and arithmetic. The technological mode was opted to eliminate challenges in traditional teaching methodology. It benefitted 15 states in India and Burkina Faso in Africa. In 2000-2009, the CBFL-based ALP programme reached more than 1,20,000 people.⁶⁹

In CBFL, graphics patterns for visualization and audio appreciation is used to help in recognition, retention & recollection of information. The content is presented via a multimedia puppet show and focuses on individual words rather than the alphabet, with the aim of teaching learners to read and write 700 commonly used words in their native language. The content is provided in nine Indian languages (Bengali, Gujarati, Hindi, Kannada, Marathi, Odia, Tamil, Telugu and Urdu) and three foreign languages [Arabic, Northern Sotho (South Africa) and Moore (Burkina Faso)].

TCS worked with partnering organizations/non-governmental organization to carry out the program, connect to cite of intervention, and perform baseline surveys to identify people in need of literacy education. Before the Covid-19 pandemic, laptops and the designed application/software were provided to volunteers from

⁶⁸<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/reading-billion-same-language-subtitling-india>

⁶⁹https://www.researchgate.net/publication/258052421_Transforming_Literacy_through ICTs

the partnering organizations, who in turn utilized these on sites of intervention. After the pandemic, the application was provided in MP4 format.

Benefits:

- **Standard Quality of Education:** The software does not require highly qualified teachers. Services of para-teachers with basic training can be utilized to provide high quality standardized education.
- **Cost Efficiency:** TCS saved more than Rs. 8 crores on social cost to the nation by applying the CBFL method to each 1,20,000 people⁷⁰ The program costs were/are based on number of beneficiaries. As on 2019, the per person cost stood as INR 500 (approximately US\$7)⁷¹
- **Greater Retention of Information:** There is

greater effectiveness of learning content through multimedia courses that capture attention and motivate. The beneficiaries successfully navigated the 3R'S of literacy-Reading, Writing and Arithmetic.

- **Wide Coverage:** Can be utilized by anyone with access to a basic computer.
- **Reduced Course Length:** The CBFL model adapts the majority of NLMA primers directly into its courses, but with technology, the training program time was reduced from 300 hours of traditional learning to 50 hours. A comparative analysis of the existing conventional method and the CBFL method states that a 45 hours CBFL course lasting 3-4 months can achieve the same amount of progress as seen in 200 hours of a conventional course lasting 9-18 months. Pace of learning can also be adjusted.

Tables A and B below contain a comparative perspective of the TCS program with other conventional adult literacy programs.

Table A : Comparative Analysis of the Conventional and CBFL Methods

Parameter	Conventional Method	CBFL Method
Delivery Mechanism	Instructor Led	Computer Based
Course Duration	200 hours in 9-18 months	45 hours in 3-4 months
Teaching Skills Required	High (Professional Teachers Required)	Low (Preraks :Para Teachers with basic training)
Computer Requirement	None	Medium(Intel 80486-make PCs)
Dropout Rate	High	Low(10-12%)
Scope for Repetition	No	Yes
Pace of Learning	Cannot be adjusted	Cannot be adjusted, as required
Simultaneous use of spoken words and visual medium	Not possible	Possible
Standardization in Teaching	Not Possible	Possible
Flexibility of Learning	Low	High
Effectiveness of Learning Content	Low	High (through Multimedia courses that capture attention and motivates)
Estimated Time Required to achieve 90% literacy levels in the country	15-20 years	5-7 years

Table B: Comparative Analysis of Cost between the Conventional and CBFL Methods

Parameter	Conventional Method	CBFL Method	TCS Cost Effectiveness
Cost of making 1,20,000 persons literate	Rs 9,14,40,000	Rs 1,13,7000 ⁷²	Rs 8,00,70,000

⁷⁰https://g01.tcsion.com/dotcom/ALP/Downloads/CSR_Casestudy_Computer_Based_Functional_Literacy_08_09.pdf

⁷¹<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/tata-consultancy-services-adult-literacy-programme>

⁷²Combined ALPs (Telugu and Urdu) @Rs 100 per literate (for 1,11,000 persons) 1,11,000*100=1,11,00000 ALP Urdu @Rs 30 per literate at Siasat: 9000*30=2,70,000 Total =1,13,70000

III. TARA Akshar+ - Development Alternatives

TARA Akshar+ (TA+) is an NLM-accredited initiative that aims to impart foundational literacy to rural and peri-urban women. The program is operationalized through a computer software that has been developed by TARA Akshar and takes support of an instructor to impart instructions. The program aims to empower its students by creating awareness about basic healthcare, legal rights and laws, ways they can contribute to the economy and generate income opportunity.⁷³

TA+' literacy program is based on innovative pedagogical techniques that involve animated cartoons and stories, quizzes and other auditory, visual and kinesthetic activities. ⁷⁴ The program is modelled to make learners functionally literate in both urban and rural areas. The 56 day program has 1-2 hours of teaching per day in a batch of 8-10 students.

As on December 31, 2020, the program had reached around 2,48,000+ women in 1900+ villages in 11 states in northern India. Of these, only around 2000 women have dropped out of the program. Most beneficiaries of the program successfully passed the post-program exam. It was also observed that newly-literates/beneficiaries of the program read newspapers and watch news more often (than they did before TARA Akshar+), are aware about the schemes and services that have been made available for them by the government and know how to how to avail these schemes and the benefits.

IV. Adult Literacy and Continuing Education Program - Vikas Shiksha Samiti

The program aims at achieving total literacy for the age group of 15-45 years to achieve transformation in rural areas. It runs for 8 months and takes place in three phases. After a village achieves 100% literacy, a 'Life Skills and Livelihood Skills Training Center' is set up to reinforce the learning of newly literates and to provide them with access to facilities for lifelong learning opportunities.⁷⁵

Process:

• **1st Stage:** In one month's duration, promotional and preparatory activities are undertaken: viz identifying and grouping the villages in clusters, holding discussions with the stakeholders, identifying the motivators and instructors, carrying out a survey on the number of illiterates etc. A one-day orientation-cum-training program is conducted for the instructors. Further, learning centers are identified, timings are finalized, and all the learning material (primers, slates, black boards) are procured. Motivational meetings with the stakeholders – Adult Education Department officials, motivators, community members, and organization staff – are conducted every week.

• **2nd Stage:** Classes are conducted for five months (total 180 hours). The use of ICT is made an integral part of the teaching. Computers are installed at a central location in the village, which the learners from each literacy center have access to on specified days. The content used in teaching has been specifically developed for the literacy program. Online formats have been developed to monitor the program learner-wise, center-wise, and village-wise. At the end of 2nd stage, an examination is conducted in the three areas of reading, writing and arithmetic.

• **3rd Stage:** In the final two months, a second exam is held for those who fail to appear/clear the exam with 70% marks. Once all the learners have cleared the test, the village is declared to have achieved near 100% literacy.

Teaching structure incorporates ICT and provides for continuing education through a Life Skills and Livelihood Skills Training Center. Based on village population, 20 – 25 literacy centers are set up and depending on the number of learners, 20 – 25 local instructors are identified per center (Ratio: 1:15). Additionally, motivators are engaged to support instructors. The program started in 2013 and is operational in 167 villages, of which 146 villages have achieved 100% literacy - roughly 47,500 new literates out of 52,250 enrolled learners.

⁷³<https://taraakshar.org/abouttaraakshar>

⁷⁴<https://www.wise-qatar.org/project/tara-akshar-literacy-program-india/>

⁷⁵<https://www.vssgroups.org/adult-literacy-and-continuing-education/>

Government Technology based Literacy Initiatives

Technology Intervention	Intervention Details
<p>Satellite Technology⁷⁶⁻⁷⁷ (1975)</p>	<ol style="list-style-type: none"> 1. Satellite Instructional Television Experiment (SITE) – an ISRO project which made use of satellite based television systems. 2. Television programs were produced by All India Radio in consultation with the government and broadcasted by NASA's satellite positioned above India. 3. Programmes covered health, hygiene, family planning, nutrition, improved practices in agriculture and events of national importance in 4 languages. <p>Target Audience and Deliverable:</p> <ol style="list-style-type: none"> 1. Experiment covered more than 2400 villages in 20 districts of six states. 2. Educational television (ETV) and instructional television (ITV) programs were developed for learners and teacher training. <p>Benefits:</p> <ol style="list-style-type: none"> 1. 52% of the viewers of these programmes reported themselves amenable to applying the new knowledge gained by them.⁷⁸ 2. Led to increased focus on satellite broadcasting, development of open and distance learning (ODL) education system, INSAT and EDUSAT. 3. Preraks in the Continuing Education Programme of the National Literacy Mission were trained using Satellite technology in ODL.
<p>Technology Mission for Eradication of Illiteracy⁷⁹ (1987-88)</p>	<ol style="list-style-type: none"> 1. Technology Mission, initiated when India's literacy rate was around 50%, had the dual focus of motivating people (adults in particular) to learn, and providing materials to teachers. 2. Aimed to rectify the deficiencies in the physical teaching- learning environment and improve content and quality of learning. 3. 42 Regional Research Laboratories were consulted by CSIR. 4. Use of radio, audio cassette and other electronic material for learning was deployed. <p>Target Audience and Deliverable:</p> <ol style="list-style-type: none"> 1. In Gujarat, Continuing Education Preraks were trained using satellite communication. 2. Technology Demonstration Districts were identified across all states for technology intervention like -dryland development technology, S&T information on use of electricity, generation and use of alternative source of energy, smokeless chulhas etc. <p>Benefits:</p> <ol style="list-style-type: none"> 1. Initial Technology Demonstrations led to computerization of the District Mission Office to capture data and research on illiteracy for micro-planning under NLM. 2. Technology used for training large group of Preraks with uniformity in content and in optimized time.

⁷⁶<https://unesdoc.unesco.org/ark:/48223/pf0000020099>

⁷⁷<http://unesdoc.unesco.org/images/0002/000200/020099eo.pdf>

⁷⁸Planning Commission (1981), pp. 3–4.

⁷⁹<http://14.139.60.153/bitstream/123456789/94/1/National%20Literacy%20Mission%201988.pdf>

**Radio Technology⁸⁰
(National Literacy
Mission)
(1990)**

1. The Project in Radio Education for Adult Literacy (PREAL) was a collaborative project between National Literacy Mission and All India Radio, launched in the context of Technology Mission under NLM.
2. Objective was to impact literacy in four states of India by reinforcing reading ability through a set of structured radio lessons.
3. As part of the project, programmes were broadcast on a regular basis from All India Radio Stations.
4. A specially designed radio reader⁸¹⁻⁸² called Akashvani Pathmala was provided for use by instructors and learners during the radio broadcasts.
5. Printed IPCL primers (instructions) were designed to support the radio programmes.

Target Audience and Deliverable:

1. Women (16-25 age) were the primary target group.
2. Program covered 16 districts of low literacy from Madhya Pradesh, Rajasthan, Bihar and UP.
3. Each radio lesson followed the instructional protocol of: listen and speak, listen and see, see and read.
4. Core content developed by NCERT. An entertainment component in local language was rooted with instructional design.

Benefits:

1. A new pedagogy Improved Pace and Content of Learning (IPCL) was channelized through radio technology which shortened the time span for achieving functional literacy.
2. The results indicated that the culturally specific materials, pace of the programme, and the novelty of the radio lessons appealed to the learners and instructors.
3. Literacy and training was transformed from a mechanistic process to an active, dynamic and interactive process.
4. Effectiveness of PREAL in terms of reinforcing reading ability of women learners, was limited.

**Television⁸³
(1990s)**

Jaag Sakhi, Khilti Kaliyan, Chauraha TV programmes.

Target Audience and Deliverable:

Television programmes on Doordarshan targeting rural women as new-learners and change agents were used to mobilize the community. Chauraha was designed to be a daily telecast serial with each episode using computer animation for literacy instruction and delivering social message.

Benefits :

The programmes prepared the ground-work for the strong use of television for literacy awareness, imparting instructions and its significance for development.

⁸⁰https://www.researchgate.net/publication/335260829_Two_Decades_of_NLM_1?enrichId=rgreq-81e87d529a3e7d3819eab0c7a3929ae0-XX&enrichSource=Y292Z2XJQYWdOzMzNTI2MDgyOTtBUzo3OTM5MjMxODIxNDk2MzNAMTU2NjI5NzQ0NTYxMg%3D%3D&el=1_x_2&esc=publicationCoverPdf

⁸¹<https://homepages.wmich.edu/~whitten/StudentsatWesternMichigan/sped534strategies/Reading%20Fluency/radio%20reading.pdf>

⁸²<https://blog.advancementcourses.com/classroom-activities/round-robin-reading-alternatives/>

⁸³https://www.researchgate.net/publication/335260829_Two_Decades_of_NLM_1

**Software
Development⁸⁴
(1994)**

1. Equivalency Programmes - an alternative educational programme equivalent to existing formal education was developed for neo-literates.
2. The open and distance learning system became the appropriate vehicle for equivalency programmes.
3. Open Basic Education Programme by NIOS was a program for creating a learning continuum for neo-literates.
4. A special software was developed by NIOS to keep track of learners.

Target Audience and Deliverable:

1. Open Basic Education (OBE) Programme was meant for those neo-literates who desired to continue their formal education through a schooling channel.
2. Targeted neo-literates who have successfully completed the TLC (Total Literacy Campaign) and PLC (Post Literacy Campaign) stages of the National Literacy Mission.
3. Course material distributed through state national literacy mission authority.
4. Course materials in the form of self-instructional materials were developed in collaboration with NIOS.

Benefits :

1. A comprehensive and uniform database of learners was available to all agencies.
2. Computerization and management of data was used significantly and enabled to keep track of the learner.

**Computer
Technology⁸⁵
(1999)**

1. Commonwealth of Learning Literacy (COLLIT) Project- The focus of the project was on 'promotion of technology based literacy'.
2. The model implemented was the Technology Based Community Learning Center (CLC) where learners would be able to access technologies, undergo training as well as interact with each other.
3. The families decide what the learner from their family would learn and they monitor their learning milestones through their monthly meetings

Target Audience and Deliverable:

1. A three year project to create interest among adult women to use computers in order to become literate.
2. A series of multimedia and audio-visual training through education CDs, power-point were imparted to the learners and the instructors.
3. Instructions on issues of water harvesting, women's health, adolescent health and awareness programs, use of bio-manure, bio-pesticides and hybrid seed cultivation were some of the learnings.
4. Local based literacy material which incorporated ICTs was developed.

Benefits:

1. The illiterate adults became computer literates within a year's time. Literacy skills were used by learners to read bus schedules, station signs, banners, advertisements.
2. A cadre which could use ICTs, and develop material on application of technology also developed.
3. CLCs became the focal point of convergence of community and organization.

⁸⁴<https://www.igi-global.com/chapter/equivalency-programmes-through-open-and-distance-learning/279754>

⁸⁵<http://www.srcindore.com/COLLIT.php>

Global Technology Interventions for Adult Literacy

Technology Intervention	Intervention Details
<p>Intelligent Tutoring Systems⁸⁶ for Gamification of Learning Environment⁸⁷</p>  <p>USA</p>	<ol style="list-style-type: none"> 1. Simulation and applications like Tactical Iraqi⁸⁸ ; Second Life, an online virtual world used for role-playing environments. 2. Detection and tailoring to emotion and engagement level takes place in such systems and the machine triggers avoidance or engagement on the basis of response. <p>Benefits:</p> <ol style="list-style-type: none"> 1. It can track student performance and give tailored feedback. 2. It was useful in language and culture training and non-verbal communication of other cultures.
<p>Virtual Reality for Teacher Training⁸⁹</p>  <p>Myanmar⁹⁰</p>	<ol style="list-style-type: none"> 1. As part of Connect to Learn, Ericsson deployed a virtual reality (VR) training tool. The tool has four modules, downloadable from a cloud-based server, with each module designed to allow teachers to practice methods of teaching that are more student-centered. 2. Ericsson's VR training program focuses on coaching existing teachers to adopt a learner-centered pedagogy, and is grounded in findings from extensive classroom observation data. The VR program helps teachers practice and sharpen their pedagogical and ICT integration skills. <p>Benefits:</p> <ol style="list-style-type: none"> 1. The combination of internet connectivity access to devices, customized content and teacher training facilitate access to a 21st century education. 2. Connect to Learn has the advantage of mobility, broadband and cloud solutions to provide customized educational content and information sources around the Globe. 3. A new teacher who practices using VR classroom before delivering the first class benefits.
<p>Radio Technology- for Distance Learning for Adults⁹¹</p>  <p>Cape Verde</p>	<ol style="list-style-type: none"> 1. ECCA Distance Learning System is based on the synchronized use of three elements: print materials, radio classes and orientation tutorials. 2. Print material include charts, questionnaires, audio/video CD etc. 3. Radio class include precise explanation of content of the print material 4. Orientation comprise print and radio classes and facilitate contact between learner and educator. <p>Benefits:</p> <ol style="list-style-type: none"> 1. 25 courses have been developed and more than 20,000 certificates have been issued to youths and adults who have been empowered to enter the job market as semi-professionals. 2. Distance education based on the use of new ICTs expands learners' opportunities for work-based, advanced vocational training. 3. Innovative pedagogical approaches allow for learning experiences which are tailored to participants' characteristics, learning needs and specific vocational activities.

⁸⁶<https://nap.nationalacademies.org/read/13469/chapter/6#28>

⁸⁷<https://www.npr.org/2005/02/17/4503426/a-virtual-course-in-iraqi-arabic>

⁸⁸<https://nap.nationalacademies.org/read/13469/chapter/6#28>

⁸⁹<https://www.ericsson.com/en/blog/2019/2/connect-to-learn-vr-in-the-classroom>

⁹⁰<https://www.ericsson.com/en/blog/2016/9/on-a-journey-with-connect-to-learn-in-myanmar>

⁹¹<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/distance-learning-adults-radio-ecca-project-socio>

Technology Intervention	Intervention Details
<p>ICT Blended Learning for Open & Distance Learning on Mobile</p>  <p>Commonwealth</p>	<p>Voice messages through mobile phones are used for distance learnings in agriculture and rural development.</p> <p>Benefits:</p> <ol style="list-style-type: none"> 1. ICT facilitates blended learning by linking the capacity building of farming community with social and financial capital of farmers. 2. Cost of capacity building using open distance learning was six times lower than the conventional face-to-face training.⁹²
<p>Mobile Literacy Programme⁹³</p>  <p>Afghanistan</p>	<ol style="list-style-type: none"> 1. The literacy lessons were imparted through standardised methods, such as reading aloud in class, writing in notebooks and memorizing words, and were reinforced through mobile technology. 2. For e.g., different kinds of messages were sent to the learners. The primary message was a 'fill in the blank' sentence, which learners were required to rewrite with the word filled in. 3. Open-ended questions meant to facilitate critical thinking and writing skills, which necessitated the repetition of the question being asked. <p>Benefits:</p> <ol style="list-style-type: none"> 1. By the end of the programme, 83% of mobile literacy students were able to complete and advance to higher level of literacy. 2. Students in the literacy programmes sent an average of 1,750 messages, using their mobile phones every day. The technology was used for both completion of assignments and communication with fellow classmates, facilitating further practice of literacy skills in daily life and socialisation.
<p>Mobile Technology for Adult Literacy</p>  <p>Niger⁹⁴</p>	<ol style="list-style-type: none"> 1. The ABC (Mobiles 4 Literacy) programme uses mobile phones as tools in promoting adult literacy and numeracy in Niger. 2. The programme was designed to assess the impact of mobile phone use on adults' learning and socio-economic outcomes. 3. The adult education programme comprised eight months of literacy and numeracy instruction over a two-year period. 4. The module gave learners basic instructions like turning the handset on and off, picking and dialling calls, and sending and receiving text messages. <p>Benefits:</p> <ol style="list-style-type: none"> 1. It integrated phone-based literacy and numeracy modules into a conventional adult literacy course. 2. ABC programme has spread to more than 400 villages in Niger over the past three years.
<p>ICT software development for empowering SHGs through education⁹⁵</p>  <p>Kenya</p>	<ol style="list-style-type: none"> 1. ICT skills are integrated in the day-to-day lives of participants, by using Avallain Author» software, a system for the creation of interactive e-learning content on diverse subject matters, beginning with basic literacy. 2. It gives users the opportunity to adapt simulated case studies so that they are as practically relevant as possible, using paper forms and real-life situations that learners must resolve

⁹²<https://www.col.org/skills/lifelong-learning-for-farmers/>

⁹³<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/mobile-literacy-programme-afghanistan-afghanistan>

⁹⁴<https://files.eric.ed.gov/fulltext/ED573633.pdf>

⁹⁵<https://files.eric.ed.gov/fulltext/ED573633.pdf>

Technology Intervention	Intervention Details
	<p>3. The programme uses XO laptops, known from the «One laptop per child» campaign, and provided by Avallain.</p> <p>Benefits:</p> <ol style="list-style-type: none"> 1. The XO laptops are useful as they have good portability and long battery life. 2. Their relatively lower cost (approximately USD 200 per unit) makes them more accessible and affordable.
<p>Adult Literacy Using Information Technology⁹⁶</p>  <p>Lebanon</p>	<ol style="list-style-type: none"> 1. The major objective of the project is to combat illiteracy by teaching learners how to read, write and count in an interactive way through the use of computer-based images, sounds and text. The learner/user learns by viewing images, hearing sounds, speaking words into a microphone, writing letters and words on a writing pad, a touch screen or a tablet PC. 2. Programme's core technological component-Interactivity, Self-paced learning, learning through leisure. <p>Benefits:</p> <ol style="list-style-type: none"> 1. Computer-aided literacy learning provided learners with an opportunity to develop computer skills and access a large body of information and learning tools. 2. Lesson Learned- In order to combat illiteracy effectively, technology and pedagogy should be interwoven, under the guidance of experienced educators.
<p>Immersion environments / Gamification- for Adult Literacy⁹⁷</p>  <p>Germany</p>	<ol style="list-style-type: none"> 1. Winterfest is a computer game for technology aided literacy courses. 2. The German Adult Education Association has achieved good results with this computer-aided literacy course. 3. Gamification and 3D Scenarios provide a setting where participants look at a situation from multiple perspectives. <p>Benefits:</p> <ol style="list-style-type: none"> 1. Simulating Risky Events is possible like conflict situations or OSH (occupational safety and hazards) incidents without putting participants at risk. 2. Winterfest is the recipient of the 2011 European E-Learning Award (eureleA) in the category –Best Technology Supported learning as well as Serious Games Award in the Gold category, 3. In 2010 it was distinguished with the LARA Education Award.
<p>Mobile and Web Technology for Language Literacy⁹⁸</p>  <p>Brazil</p>	<ol style="list-style-type: none"> 1. Programme of Mother Language Literacy (PALMA) was launched in 2011. It uses mobile and web technologies, along with SMS text-messaging functionality. 2. It combines literacy learning elements with activities to boost cognitive understanding. 3. It uses sounds, letters, pictures and numbers in an educational programme delivered entirely through a mobile device. 4. It provides a platform for users to learn, practice and be tested on literacy, numeracy and science-based modules in regional languages. <p>Benefits:</p> <ol style="list-style-type: none"> 1. The PALMA programme and resources are available for anyone outside the formal education system. 2. Higher class attendance (absenteeism fell by 50%); Learnings outside the classroom and the use of technology outside of the learning session also increased.

⁹⁶<https://uil.unesco.org/case-study/effective-practices-database-litbase-0/adult-literacy-using-information-technology>

⁹⁷https://www.ijntr.org/download_data/IJNTR03080011.pdf

⁹⁸<https://files.eric.ed.gov/fulltext/ED573633.pdf>

Literacy Project for Girls and Women using ICTs⁹⁹



Senegal

1. Courses are available on CD, on television, online and on mobile applications.
2. Classrooms, equipped with digital kit which includes a laptop, an interactive beamer and an infrared stylus touch pen used to write on a digital board. Adapted software is also included in the kit. These were provided by the Sankoré programme, an educational partnership.
3. Examples of the technology used and its installation process can be found on the Sankoré website. The software, called Open Sankoré was designed to encourage active participation.
4. The online course used an approach called 'Alpha-omedia', which permits users to learn at their own pace, as well as to track their progress and select their courses. An Android-based mobile application, designed to be used offline, was also developed.

Benefits:

Television a key feature in the classroom, with various news and educational programmes used during classes. This helps ensure that participants not only improve their basic literacy skills, but also learn about nutrition, health, the environment and other important issues

Mobile and App based -Learning for Adult Literacy¹⁰⁰



Ivory Coast

1. Maggi Mammies Digital Literacy Project targeted illiterate women selling products in the open market.
2. Women are provided with a smartphone and an adult literacy application called Alphatic.
3. It enabled convenient and self-paced literacy training and learning of critical skills in reading, calculations and digital literacy for the women from Ivory Coast.

Benefits:

1. Developing literacy skills enabled independence and allowed women to take charge of their families.
2. Of 520 identified illiterate, 435 completed their training and know how to use laptops, and read, write and calculate.
3. Ivorian Government now has a manual and a digital literacy guide on a training approach.
4. 65% of the participating women could read, write and count at different level of proficiency.

Blended learning+ Social Media Platform¹⁰¹



Germany

1. German Adult Education Association created a learning portal, the VHS Lernportal, to serve Germany's 900+ adult education centres.
2. The VHS Lernportal provides free online German as a second language, literacy and basic skills courses for migrants. The curriculum is designed to be used either by facilitators in classrooms as a teaching tool or for self-study by individuals on a mobile device. The portal has even been made available on Facebook and social media platforms. It is optimized for a blended learning approach and can be used offline.
3. Each course starts with a specific scenario based on a short sequence of animated illustrations in which different characters successfully master everyday challenges. These characters accompany the learners throughout the lessons and across all of the courses.

Benefits:

1. VHS Lernportal enables learners to acquire literacy skills (basic, digital, family and health literacy) and is designed to be easy to navigate and compatible with smartphones or other mobile devices.
2. As of September 2020, approximately 26,000 teachers and 500,000 learners were using the VHS Lernportal. The curriculum can be accessed by around 900 adult education centres across Germany

⁹⁹ <https://uil.unesco.org/case-study/effective-practices-database-litbase-0/literacy-project-girls-and-women-using-icts>

¹⁰⁰ http://www.apanews.net/mobile/unelInterieure_EN.php?id=4954869

¹⁰¹ <https://uil.unesco.org/case-study/effective-practices-database-litbase-0/vhs-lernportal-germany>

List of Districts with 10 Lakh+ illiterates (15+ age group)

S. No.	State/ UT	District	Illiterate Population	Percentage of State's illiterate Population #
1	Andhra Pradesh	Anantapur	12,61,432	5.32%
2		Chittoor	10,20,833	4.31%
3		East Godavari	12,86,052	5.42%
4		Guntur	13,67,833	5.77%
5		Karimnagar ^{*1}	11,98,186	5.05%
6		Krishna	10,20,364	4.30%
7		Kurnool	13,16,727	5.55%
8		Mahbubnagar ^{*1}	14,81,755	6.25%
9		Nalgonda	10,73,866	4.53%
10		Prakasam	10,67,404	4.50%
11		Rangareddi ^{*1}	10,57,876	4.46%
12		Visakhapatnam	12,07,544	5.09%
13		Warangal ^{*1,4}	10,66,577	4.50%
14	Bihar	Dharbanga	11,69,437	4.20%
15		Gaya	11,34,409	4.08%
16		Madhubani	13,24,943	4.76%
17		Muzaffarpur	12,47,704	4.49%
18		Paschim Champaran	11,91,733	4.28%
19		Patna	12,06,457	4.34%
20		Purba Champaran	15,39,925	5.54%
21		Purnia	10,63,645	3.82%
22		Samastipur	11,52,757	4.14%
23		Sitamarhi	11,01,372	3.96%
24	Karnataka	Belgaum	10,52,831	8.31%
25	Maharashtra	Pune	10,67,823	6.55%
26		Thane	13,63,147	8.36%
27	Rajasthan	Jaipur	12,90,348	7.25%
28	Uttar Pradesh	Allahabad	12,62,917	2.62%
29		Azamgarh	10,41,195	2.16%
30		Bahraich	11,95,575	2.48%
31		Bareilly	13,14,693	2.72%
32		Budaun	12,39,450	2.57%
33		Gonda	10,26,279	2.13%
34		Gorakhpur	10,00,681	2.07%
35		Hardoi	10,82,066	2.24%
36		Jaunpur	10,01,415	2.07%
37		Kheri	11,50,809	2.38%
38		Muzaffarnagar	14,55,452	3.02%
39		Sitapur	12,74,568	2.64%
40	West Bengal	Barddhaman ^{*2}	15,47,675	8.70%
41		Maldah	11,46,804	6.45%
42		Murshidabad	18,78,187	10.56%
43		Nadia ^{**}	11,18,246	6.29%

S. No.	State/ UT	District	Illiterate Population	Percentage of State's illiterate Population #
44	West Bengal	North Twenty Four Parganas	13,47,573	7.58%
45		Paschim Medinipur	10,77,863	6.06%
46		South Twenty Four Parganas	14,51,557	8.16%
	Total		5,59,45,985	

Note:

Districts in Grey are aspirational districts already covered under Padhna Likhna Abhiyan in Phase 1; rest of the districts have not been covered.¹⁰²

This is based on **Census 2011** data and the total illiterate population for different states is: Andhra Pradesh - 2,37,06,198, Bihar - 2,78,15,648, Karnataka - 1,26,75,423, Maharashtra -1,63,03,772, Rajasthan - 1,78,08,955, Uttar Pradesh - 4,82,72,087 and West Bengal - 1,77,87,577

*1-Districts formerly in the state of Andhra Pradesh (Census-2011), currently part of State of Telangana.

*2- Bardhaman district (Census 2011) was split into East and West Bardhaman in 2017, where East Bardhaman has higher illiterate population.

*4-Bhopapalli is an Aspirational district carved out from Warangal district of Andhra Pradesh after newly created State Telangana from Andhra Pradesh in 2014.

** -Newly added aspirational districts.

¹⁰²<https://dsel.education.gov.in/sites/default/files/2020-05/PLA-Guidelines.pdf>

List of Districts with 5 Lakh+ illiterates (15+ age group)

S. No.	State/ UT	District	Illiterate Population	Percentage of State's illiterate Population #
1	Andhra Pradesh	Adilabad ^{3**}	8,98,423	3.79%
2		Anantapur	12,61,432	5.32%
3		Chittoor	10,20,833	4.31%
4		East Godavari	12,86,052	5.42%
5		Guntur	13,67,833	5.77%
6		Hyderabad	5,24,827	2.21%
7		Karimnagar	11,98,186	5.05%
8		Khammam ³	8,49,570	3.58%
9		Krishna	10,20,364	4.30%
10		Kurnool	13,16,727	5.55%
11		Mahbubnagar ³	14,81,755	6.25%
12		Medak	9,83,242	4.15%
13		Nalgonda	10,73,866	4.53%
14		Nizamabad	8,39,195	3.54%
15		Prakasam	10,67,404	4.50%
16		Rangareddi ³	10,57,876	4.46%
17		Sri Potti Sriramulu Nellore	7,90,663	3.34%
18		Srikakulam	8,98,361	3.79%
19		Visakhapatnam	12,07,544	5.09%
20		Vizianagaram	8,30,788	3.50%
21		Warangal ^{3*4}	10,66,577	4.50%
22		West Godavari	8,66,939	3.66%
23		Y.S.R.	7,97,741	3.37%
24	Assam	Dhubri	5,53,887	8.51%
25		Nagaon	5,76,800	8.86%
26	Bihar	Araria	8,73,999	3.14%
27		Aurangabad	5,45,006	1.96%
28		Banka	5,96,915	2.15%
29		Begusarai	7,41,315	2.67%
30		Bhagalpur	7,73,190	2.78%
31		Bhojpur	5,75,370	2.07%
32		Dharbanga	11,69,437	4.20%
33		Gaya	11,34,409	4.08%
34		Gopalganj	6,45,765	2.32%
35		Jamui	5,10,926	1.84%
36		Katihar	9,84,012	3.54%
37		Kishanganj	5,15,697	1.85%
38		Madhopura	6,38,619	2.30%
39		Madhubani	13,24,943	4.76%
40		Muzaffarpur	12,47,704	4.49%
41		Nalanda	7,17,080	2.58%
42		Nawada	6,15,479	2.21%
43	Paschim Champaran	11,91,733	4.28%	

S. No.	State/ UT	District	Illiterate Population	Percentage of State's illiterate Population #	
44	Bihar	Patna	12,06,457	4.34%	
45		Purba Champaran	15,39,925	5.54%	
46		Purnia	10,63,645	3.82%	
47		Rohtas	5,79,942	2.08%	
48		Saharsa	5,86,466	2.11%	
49		Samastipur	11,52,757	4.14%	
50		Saran	9,61,176	3.46%	
51		Sitamarhi	11,01,372	3.96%	
52		Siwan	7,62,645	2.74%	
53		Supaul	6,62,304	2.38%	
54		Vaishali	8,59,093	3.09%	
55		Chhattisgarh	Bilaspur	6,01,215	9.99%
56			Durg	5,73,002	9.52%
57			Raipur	7,89,184	13.11%
58	Surguja		7,30,952	12.15%	
59	Gujarat	Ahmadabad	8,60,157	8.00%	
60		Banas Kantha	8,42,748	7.83%	
61		Bhavnagar	5,70,753	5.31%	
62		Dohad	6,35,544	5.91%	
63		Junagadh	5,58,687	5.19%	
64		Panch Mahals	5,51,896	5.13%	
65		Rajkot	5,99,374	5.57%	
66		Surat	7,06,525	6.57%	
67		Vadadora	7,06,728	6.57%	
68		Jharkhand	Dhanbad	5,35,274	6.40%
69	Giridih		6,61,955	7.92%	
70	Palamu		5,27,658	6.31%	
71	Ranchi		5,52,666	6.61%	
72	Karnataka	Bangalore	9,86,537	7.78%	
73		Belgaum	10,52,831	8.31%	
74		Bellary	6,46,477	5.10%	
75		Bijapur	5,78,639	4.57%	
76		Gulbarga	7,22,570	5.70%	
77		Mysore	7,13,522	5.63%	
78		Raichur	6,20,995	4.90%	
79		Tumkur	5,83,599	4.60%	
80	Madhya Pradesh	Dhar	6,72,287	3.86%	
81		Rewa	5,31,546	3.05%	
82		West Nimar	5,18,311	2.97%	
83	Maharashtra	Ahmadnagar	7,84,324	4.81%	
84		Aurangabad(M)	6,22,115	3.82%	
85		Jalna	7,34,335	4.50%	
86		Kolhapur	6,08,097	3.73%	
87		Mumbai Suburban	7,81,919	4.80%	
88		Nanded	6,66,075	4.09%	
89		Nashik	8,60,258	5.28%	
90		Pune	10,67,823	6.55%	
91		Solapur	8,24,484	5.06%	
92		Thane	13,63,147	8.36%	

S. No.	State/ UT	District	Illiterate Population	Percentage of State's illiterate Population #
93	Odisha	Ganjam	8,36,039	9.13%
94		Kalahandi	5,06,803	5.54%
95		Koraput	5,24,702	5.73%
96		Mayurbhanj	7,19,821	7.86%
97	Punjab	Ferozpur	5,16,055	9.26%
98		Ludhiana	5,05,782	9.08%
99	Rajasthan	Ajmer	6,02,785	3.38%
100		Alwar	8,38,258	4.71%
101		Banswara	5,70,893	3.21%
102		Barmer	7,99,654	4.49%
103		Bharatpur	5,69,869	3.20%
104		Bhilwara	7,19,914	4.04%
105		Bikaner	5,96,165	3.35%
106		Churu	5,24,287	2.94%
107		Jaipur	12,90,348	7.25%
108		Jalor	6,09,086	3.42%
109		Jodhpur	9,24,939	5.19%
110		Nagaur	9,53,159	5.35%
111		Pali	6,00,515	3.37%
112		Sikar	6,05,245	3.40%
113		Udaipur	8,55,028	4.80%
114		Tamil Nadu	Erode	5,52,538
115	Kancheepuram		5,28,483	4.25%
116	Salem		8,27,811	6.66%
117	Thiruvallur		5,07,322	4.08%
118	Tiruvannamalai		5,43,223	4.37%
119	Vellore		6,93,903	5.58%
120	Viluppuram	8,25,475	6.64%	
121	Uttar Pradesh	Agra	9,13,343	1.89%
122		Aligarh	8,64,069	1.79%
123		Allahabad	12,62,917	2.62%
124		Ambedkar Nagar	5,27,868	1.09%
125		Azamgarh	10,41,195	2.16%
126		Bahraich	11,95,575	2.48%
127		Ballia	7,21,474	1.49%
128		Balrampur	7,36,214	1.53%
129		Bara Banki	9,29,629	1.93%
130		Bareilly	13,14,693	2.72%
131		Basti	6,17,250	1.28%
132		Bijnor	8,73,405	1.81%
133		Budaun	12,39,450	2.57%
134		Bulandshahr	8,12,910	1.68%
135		Deoria	6,96,501	1.44%
136		Faizabad	6,00,783	1.24%
137		Fatehpur	6,59,464	1.37%
138		Firozabad	5,07,074	1.05%
139		Ghaziabad	7,58,895	1.57%
140	Ghazipur	7,85,920	1.63%	

S. No.	State/ UT	District	Illiterate Population	Percentage of State's illiterate Population #
141	Uttar Pradesh	Gonda	10,26,279	2.13%
142		Gorakhpur	10,00,681	2.07%
143		Hardoi	10,82,066	2.24%
144		Jaunpur	10,01,415	2.07%
145		Kanpur Nagar	7,38,292	1.53%
146		Kheri	11,50,809	2.38%
147		Kushinagar	9,27,256	1.92%
148		Lucknow	8,11,210	1.68%
149		Mahraganj	7,56,478	1.57%
150		Mathura	5,62,106	1.16%
151		Meerut	6,89,135	1.43%
152		Mirzapur	6,01,539	1.25%
153		Muzaffarnagar	14,55,452	3.02%
154		Phule	9,42,168	1.95%
155		Pilibhit	5,85,341	1.21%
156		Pratapgarh	7,53,149	1.56%
157		Rae Bareli	8,67,940	1.80%
158		Rampur	7,76,456	1.61%
159		Sant Kabir Nagar	7,76,648	1.61%
160		Shahjahanpur	8,74,928	1.81%
161		Siddharthnagar	7,40,213	1.53%
162		Sitapur	12,74,568	2.64%
163		Sultanpur	9,07,269	1.88%
164		Unnao	8,04,824	1.67%
165		Varanasi	6,96,835	1.44%
166	West Bengal	Bankura	8,91,993	5.01%
167		Bardhaman	15,47,675	8.70%
168		Birbhum**	8,31,849	4.68%
169		Haora	6,74,087	3.79%
170		Hugli	8,68,234	4.88%
171		Jalpaiguri	8,62,901	4.85%
172		Koch Bihar	5,91,313	3.32%
173		Kolkata	5,25,336	2.95%
174		Maldah	11,46,804	6.45%
175		Murshidabad	18,78,187	10.56%
176		Nadia**	11,18,246	6.29%
177		North Twenty Four Parganas	13,47,573	7.58%
178		Paschim Medinipur	10,77,863	6.06%
179		Purba Medinipur	5,51,335	3.10%
180		Puruliya	8,29,799	4.67%
181		South Twenty Four Parganas	14,51,557	8.16%
182		Uttar Dinajpur	8,92,505	5.02%
	Total		15,21,55,520	

Note:

Districts in Grey are aspirational districts already covered under Padhna Likhna Abhiyan in Phase 1; rest of the districts have not been covered¹⁰³

This is based on **Census 2011** data and the total illiterate population for different states is: Andhra Pradesh - 2,37,06,198, Assam - 65,07,021, Bihar - 2,78,15,648, Chhattisgarh - 60,18,276, Gujarat - 1,07,58,275, Jharkhand - 83,60,017, Karnataka - 1,26,75,423, Madhya Pradesh - 1,74,24,138, Maharashtra - 1,63,03,772, Orissa - 91,52,901, Punjab - 55,72,929, Rajasthan - 1,78,08,955, Tamil Nadu - 1,24,30,529, Uttar Pradesh - 4,82,72,087 and West Bengal - 1,77,87,577

*3- Districts formerly in the state of Andhra Pradesh (Census-2011)

*4-Bhopapalli is an Aspirational district carved out from Warangal district of Andhra Pradesh after newly created State Telangana from Andhra Pradesh in 2014.

** -Newly added aspirational districts.

¹⁰³<https://dsel.education.gov.in/sites/default/files/2020-05/PLA-Guidelines.pdf>

About Authors:

1. Nivedita Krishna is a Technology Policy Consultant with the Wadhvani Institute of Technology and Policy in New Delhi

2. Utkarsh Singh is a Technology Policy Analyst with the Wadhvani Institute of Technology and Policy in New Delhi

3. Alok Gupta is Director Policy and Technology with the Wadhvani Institute of Technology and Policy in New Delhi and a Senior Fellow with the Wadhvani Chair in U.S.-India Policy Studies at the Center for Strategic and International Studies in Washington, D.C





www.wfglobal.org

ASIA | AFRICA | LATIN AMERICA