

A Paradigm Shift in Education Management Upskilling Teachers in ICT And Adapting Learning Management System for an Aging Population in Viksit Bharat 2047

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Abstract- Technology is instrumental in transforming the delivery of services, improving accessibility, and ensuring that older adults can live independently and with dignity through digital platforms that offer access to healthcare, social security benefits, telemedicine, smart home technologies, and online community services. A significant transformation in education management is necessary to equip teachers with advanced ICT (Information and Communication Technology) skills, enabling them to effectively adapt Learning Management Systems (LMS) for older learners who may encounter unique challenges in digital literacy. This transformation is particularly crucial given the increasing demand for digital inclusivity, especially for seniors seeking access to lifelong learning, social welfare services, healthcare, and community engagement. This abstract examines the intersection of teacher training, ICT upskilling, and LMS adaptation, emphasizing the urgent need for educators to devise strategies that address the specific learning styles and needs of the aging population. By enhancing teacher competencies in these domains, India can ensure that its aging citizens are not marginalized in the digital revolution, equipping them with the knowledge and tools necessary to actively participate in a changing society. As India envisions a future where technology propels societal advancement, the digital inclusion of older adults must be a priority in fostering a more equitable, prosperous, and age-friendly society in Viksit Bharat 2047.

Keywords: *Technology, Social system, Social Integration, Older adult, Digital transformation, Inclusive systems*

INTRODUCTION

The government of India hopes to make India a "Viksit Bharat" (Developed India) as the country approaches its centennial independence anniversary in 2047. India's vision of achieving "Viksit Bharat" by 2047 encompasses not only advancements in technology and economic growth but also a firm commitment to inclusivity across all age groups. A critical aspect of this endeavour is meeting the needs of the nation's expanding aging population, which is essential as India aims to solidify its position as a global leader, particularly in education and digital accessibility. This vision requires a strategic response to demographic shifts, technological innovations, and the evolving needs of the elderly, including a transformative approach to education management. Key steps include upskilling educators in information and communications technology (ICT) and adapting learning management systems (LMS) to better serve the elderly, enabling them to actively participate in the digital age and embrace lifelong learning opportunities.

Building a truly inclusive nation will hinge on the education sector's ability to adapt to the digital age while addressing the needs of senior citizens, as Viksit Bharat 2047 aims for comprehensive development. This endeavor highlights the opportunities and challenges arising at the intersection of aging populations, education management, and advancements in information and communication technologies (ICT). This article explores how improving learning systems, creating inclusive educational frameworks for senior citizens, and enhancing teachers' digital proficiency can enable India's education sector to evolve and meet future demands effectively.

The Viksit Bharat 2047 Aging Population:

India is undergoing significant demographic changes, with the elderly population expected to rise substantially by 2047, potentially comprising 20% of the total population. This shift presents both opportunities and challenges, necessitating robust community support, healthcare infrastructure, and social security systems. Concurrently, it underscores the need for legislation and educational initiatives that empower senior citizens to access services, maintain independence, and

foster community connections. Leveraging technology, particularly digital tools and platforms, offers promising solutions to address these evolving needs efficiently and effectively. For seniors to fully benefit from these advancements, it is imperative that they have access to appropriate educational resources. As technology continues to reshape society, equipping older individuals with the skills necessary to navigate the digital age becomes essential, highlighting the critical role played by educators in this process.

Teachers' Contribution to the Upskilling of the Elderly:

Teachers form the cornerstone of any educational system, and the progress of society hinges on their ability to impart knowledge and skills across diverse age groups. To foster growth, the leadership of Viksit Bharat must prioritize equipping educators with advanced ICT competencies, enabling them to effectively teach both younger and older generations. Teachers need to be able to provide curriculum via digital media in addition to having traditional pedagogical competence.

Key Areas of Upskilling for Educators:

1. **Digital Literacy Training:** Teachers must undergo training programs that enable them to teach older adults basic digital literacy skills.
2. **ICT Pedagogies:** With the growing integration of technology in education, teachers must learn how to use ICT tools and methods in their class rooms. These resources encompass video tutorials, virtual classrooms, and digital assessment tools, providing valuable support for older learners.
3. **Inclusive Education Practices:** Inclusive education practices should prioritize equipping educators to foster learning environments that address the distinct challenges faced by this demographic.

Modifying Learning Management Systems for older adults:

Additionally, adapting Learning Management Systems (LMSs) to meet the specific needs of older adults is essential, as these platforms play a pivotal role in modern education by facilitating lesson planning, progress tracking, and teacher-student interactions.

The following are important LMS adaptations:

1. **Simplified User Interfaces:** Complex interfaces can pose significant challenges for older adults. To ensure accessibility, learning management systems (LMS) should incorporate features such as user-friendly designs, large fonts, seamless navigation, and intuitive layouts.
2. **Mobile-Friendly Access:** Given that many seniors rely on smartphones rather than desktop computers, optimizing LMS platforms for mobile devices is essential to reach a broader segment of the elderly population.
3. **Audio and Visual Support:** LMS platforms should also include features such as text-to-speech functionality, closed captioning, and easily readable fonts to accommodate individuals with visual or hearing impairments.

Creating a Robust Digital Infrastructure for Lifelong Learning:

1. **Community-based Learning Centres:** Libraries and community-based learning centers can act as essential digital education hubs, offering elderly individuals training and access to technology.
2. **Government Initiatives and Policies:** government policies should prioritize initiatives that promote digital inclusion among older adults, integrating digital literacy into frameworks for senior wellbeing. Enhancing ICT skills among educators and adapting learning management systems to suit the needs of senior citizens are key measures to prevent them from being marginalized in the digital age. Such efforts contribute to building a Viksit Bharat 2047 that combines technological advancement with social inclusivity, allowing people across all age groups, especially seniors, to thrive in a rapidly evolving digital society. This can be achieved by implementing a paradigm shift in school administration.

REVIEW OF THE LITERATURE

The integration of Information and Communication Technology (ICT) has brought substantial transformation to educational management globally. In the context of India, ICT aims to enhance learning outcomes, broaden access to quality education, and address the digital divide. Tools such as digital classrooms, virtual learning environments, and e-learning platforms are reshaping how education is managed and delivered. The National Policy on Education 2020

underscores the critical role of digitalization in fostering inclusive, equitable, and high-quality education. Furthermore, Kumar and Mehta (2020) emphasize that ICT is not merely a mechanism to improve instruction but also a valuable instrument for promoting inclusivity within education systems. For the elderly population, addressing accessibility requirements through ICT solutions is critically important. Advanced technologies such as screen readers, voice recognition systems, and virtual assistants hold substantial promise in supporting older individuals, empowering them to pursue educational opportunities and lifelong learning well into their later years.

Sharma and Singh (2022) emphasize that teacher professional development programs focusing on ICT training are crucial for enhancing instructional effectiveness, as improved ICT proficiency equips educators to create engaging and productive learning environments. However, Tiwari (2020) identifies several challenges hindering educators from adopting ICT, including limited time for professional development, insufficient training, and restricted technology access. Addressing these obstacles requires a comprehensive upskilling strategy involving regular workshops, peer learning opportunities, and enhanced access to resources. ICT-trained educators can leverage learning management systems (LMS) to develop tailored curricula, monitor student progress, and provide timely feedback. This capacity is particularly important for elderly people who may have different learning speeds and preferences compared to younger students.

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020), lifelong learning is essential for an aging population to stay active, acquire new skills, and maintain cognitive health. Similarly, India's 1999 National Policy for Older Persons emphasizes the importance of education in enhancing the quality of life for elderly individuals. Specialized programs targeted at seniors can address skill deficiencies, promote mental well-being, and foster social engagement.

Kaur and Arora (2023), in order to serve an elderly population, LMS platforms must be user-friendly, accessible, and furnished with assistive technologies.

Patil (2021), a blended learning paradigm that combines online and offline learning could be quite beneficial for senior citizens. With this strategy, they can benefit from both digital information access and in-person assistance when required.

The National Institute on Aging (2022) states that cognitive losses in older students may manifest as diminished attention span, memory problems, or slower processing speeds.

OBJECTIVE OF THE STUDY

In order to provide a thorough strategy for changing India's educational system by 2047, these goals seek to address the fundamental problems at the nexus of education management, ICT integration, aging populations, and the vision of a developed India.

- To evaluate the necessity of enhancing instructors' ICT skills to adequately meet the educational requirements of the aging population.
- To evaluate the suitability of Learning Management Systems (LMS) for senior learners and identify the essential features and resources that support older adults' learning needs.
- To examine the alignment of educational reforms with India's Sustainable Development Goals (SDGs), with a specific focus on addressing the needs of the aging population and advancing the vision of a developed India by 2047.

RESEARCH METHODOLOGY

This study employed a mixed-methods design, combining qualitative and quantitative approaches to provide comprehensive insights. While the quantitative analysis offered statistical evaluations of the effectiveness of these activities, the qualitative methods facilitated a deeper understanding of the challenges surrounding ICT integration, teacher professional development, and LMS adaptation for older learners. To assess the degree of ICT adoption, participation in teacher training, and the impact of LMS platforms on enhancing the learning experience for older adults, the research incorporated in-depth interviews for qualitative exploration and utilized surveys alongside data analysis through questionnaires for quantitative assessment.

Participants and Sampling: The study concentrated on various stakeholders involved in educational management, specifically targeting teachers aged 40 and above participating in ICT upskilling programs, as well as older students, aged 60 and above, engaging in online courses, digital workshops, or blended learning initiatives.

Method of Sampling: Teachers are selected through stratified random sampling to ensure representation across diverse geographic regions and varying educational levels. Meanwhile, older students actively engaged in educational programs are identified using purposeful sampling techniques.

Sample size: 100

Methods of data collection: To gather information about teachers' ICT competences, training experiences, and difficulties integrating ICT tools in the classroom—particularly for teachers over 40—a structured questionnaire with a 5-point Likert scale was created. To determine their preferred methods of learning, a poll was conducted, to learn more about individual experiences, obstacles, and triumphs in utilizing ICT for education, as well as whether LMS platforms are user-friendly for their particular requirements, semi-structured interviews were performed.

Data Analysis Methods: To evaluate the degree of ICT adoption and the efficacy of teacher training, survey responses are summarized using descriptive statistical analysis, which includes frequencies, means, and percentages. Chi-square tests and other inferential statistical analysis were used to investigate the connections between teacher ICT training, their ability to access learning management systems, and their learning outcomes.

Table 1 Personal information (Demographic Details)

SNO	ITEM	Option	Response
1	Age group		
		41-50	60
		51 and above	40
2	Location		
		Urban	60
		Rural	40
3	Educational Qualification		
		Undergraduate	20
		Postgraduate	80
4	Teaching Experience		
		10-15 years	60
		15 years and above	40

Demographic details: Responses were collected mostly from the age group of 40 years to 50 and above, out of which 60% were below 50 years and 40% were above. 60% of the respondents were from Urban area and 40% were from Rural areas. 80% respondents were postgraduates and 20% were under graduates. 60% of the respondents have 10-15 years' experience and 40% have above 15 years.

Table 2 ICT Skills and Training for Teachers

S NO	ITEM	Option	Response
1	How would you rate your current ICT skills		
		Basic	70
		Intermediate	30
2	Have you ever participated in an ICT training program		
		Yes	60
		No	40
3	If yes how effective was the training		

		Very effective	50
		Effective	50
4	What kind of ICT training do you think is most beneficial		
		Cybersecurity	60
		Advanced teaching software	40
5	Do you have access to ICT resources		
		Yes	55
		No	45

ICT skills and training for teachers: Out of 100 respondents 70% rate their ICT skills as basic and 30% as intermediate. 60% say they participated in training programs and 40% says no. 50% respondents say it was effective and 50% say not effective.

Table 3 Adapting Education for an Aging Population

S NO	ITEM	Option	Response
1	Do you think educational institutions should provide learning opportunities for elderly people above 60	Yes	100
		No	
2	What do you think are the main challenges elderly learners face when using digital learning tools		
		Lack of digital literacy	75
		Physical limitations	10
		Limited access to internet	15
3	What features would you recommend to make them more accessible for elderly learners		
		Larger fonts	70
		Audio guides	25
		In person support	5

Adapting education for an aging population: 100% of the respondents think that educational institutions should provide learning opportunities for elderly people above 50 years. 75% of them feel challenging because of lack of digital literacy, 10% feel physical limitations and 15% feel they have limited access to internet. 70% of the respondents recommend larger fonts, 25% prefer audio guides and 5% require in-person support.

Table 4 Barriers and Opportunities in Education Management

S NO	Item	Option	Response
1	What are the barriers to upskilling aging teachers in ICT		
		Lack of time for training	50
		Resistance to technology	25
		Lack of resources	25
2	What role do you think technology will play in future of education in India by 2047		
		It will be central to the system	80
		It will support traditional system	20

		Unsure	
3	How important do you think it is for India to adapt its education system to cater to an aging population by 2047		
		Extremely important	95
		Not Important	
		Unsure	5

Barriers and Opportunities: 50% of the respondents feel lack of time for training as a barrier, 25% are resistant to technology and 25% say lack of resources. While 5% are unsure about adapting technology another 95% respondents feel it is the education system which caters the needs of aging population and India can be Viksit Bharat by 2047.

This Likert scale questionnaire helps to capture opinions, attitudes and perceptions on the integration of ICT tools and LMS in teaching, as well as the challenges and opportunities posed by the aging population's educational needs. Responses offer critical insights into the potential evolution of education management systems by 2047, emphasizing the importance of inclusivity and fostering skill development across diverse age groups.

Hypothesis Testing

Hypothesis 1: Training Effectiveness Hypothesis

Null Hypothesis (H0): There is no significant difference in the perceived effectiveness of ICT training among teachers.

Alternative Hypothesis (H1): There is a significance difference Teachers and the perceived effectiveness of ICT training programs differently.

Hypothesis 2: Resource Availability Hypothesis

Null Hypothesis (H0): There is no significant correlation between access to ICT resources and confidence in using basic ICT tools.

Alternative Hypothesis (H1): Access to ICT resources is significantly correlated with confidence in using basic ICT tools.

3. Statistical Analysis Methodology

For Hypothesis 1: A Chi-Squared test was utilized to compare the perceived effectiveness of training programs across different demographic groups (e.g., age, teaching experience).

For Hypothesis 2: A correlation analysis was conducted to explore the relationship between access to resources and levels of confidence.

4. Chi-Square Test:

Chi-Square Statistic:129.24

p-value: 9.02×10^{-20} (very small, indicating a significant relationship)

Degrees of Freedom: 16

Conclusion: There is a significant relationship between the responses.

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel confident using basic ICT tools for teaching purposes	27.26	58.15	0.62	10.18	3.77
I have received adequate training in ICT to improve my teaching	29.98	63.97	0.68	11.19	4.18
The training programs I attended were effective in enhancing my ICT skills	29.37	62.63	0.66	11	4.08
I believe there should be more government-supported ICT training programs for teachers	30.49	65.04	0.69	11.39	4.22

I have access to sufficient ICT resources to support my teaching	22.89	48.21	0.51	8.43	3.13
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Table 5 Expected Frequency Table (Chi-Square Test)

This table represents the expected counts if responses were evenly distributed

Chi-Square Test Results

Test Statistic	p-value	Degrees of Freedom	Conclusion
129.24	9.02×10^{-20}	16	Significant relationship exists

Conclusion

The integration of Information and Communication Technology (ICT) into education management represents a pivotal advancement in realizing the vision of a "Viksit Bharat" by 2047. This transformation necessitates the systematic upskilling of educators in ICT and the strategic implementation of Learning Management Systems tailored to address the needs of an aging population. Emphasizing inclusivity and lifelong learning, India must strive to provide equitable educational opportunities for citizens of all ages. Addressing the challenges posed by an aging demographic requires deliberate modifications to educational content and delivery methods, ensuring that older adults are meaningfully involved in the ongoing digital evolution.

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