

BACKWARD LINKAGE OF INDIGENOUS EDUCATION SYSTEM OF DIGITISATION DURING COVID TIMES IN INDIA

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Abstract:

During the pandemic, with no physical classes held throughout the world, education started being delivered through the online mode. This is when people realized the importance of digital resources and network connectivity. With 84% of the rural population in India having poor access to the internet and network connectivity, it became difficult to penetrate through the rural education system by completely replacing the traditional teaching methods with online teaching-learning methods. UNESCO 2021 report indicates 1.2 lakhs schools in India are run by single teachers. With this backdrop and limited access to resources, especially, the areas with poor network connectivity and limited access to digital resources turned back to indigenous ways of learning. This paper using the data triangulation method, highlights the importance of “*doorstep learning*”, through case studies of the rural areas of Maharashtra, India. The two districts used for comparative analysis have been chosen based on the stark difference in the network connectivity. Pune, being the second most

urbanised district in the state has robust network connectivity, whereas Ratnagiri, due to its geographical location does not enjoy the same. Based on primary data collected through in-depth interviews, reports, and pictures, this paper highlights the adaptability and flexibility used by the teachers of these regions for successfully delivering education during the pandemic. This paper highlights the importance of *indigenous education style* in rural India even during present times. “Doorstep education” can be used in developing countries with similar geographical limitations, like: African countries and south-east Asian countries, like Bangladesh, Nepal, and Sri Lanka. This study confirms that digital education of teachers facilitates quality digital learning for students.

Keywords: *Online Education; E-learning; Indigenous Education; Rural areas; Maharashtra; Case study.*

INTRODUCTION

Ancient Indian universities like Nalanda and Taxilla attracted students from all over the world and were well known for their rigorous education system. Historical references and research done pre and post during the colonial period in India show the existence of a robust indigenous education system that was forcibly uprooted by the western educated system (Dharampal, 1983). The glorified history of the Indian education system, where universities like Taxilla and Nalanda flourished and attracted students from all across the world, was majorly based on the framework of the indigenous style of teaching and learning. The pre-British educational period in India consisted mainly of Indigenous education, which promoted local knowledge, rituals, arts, crafts, and occupations, taught by single gurus or teachers. The idea behind going back and promoting indigenous knowledge and learning has been the concept of sustainable development, which is being now promoted by the United Nations as SDGs (Sustainable Development Goals).

The indigenous style of learning promotes skill enhancement and gives more space and freedom to the learner without restricting the student into a fixed pedagogy or methodology of teaching a subject. Studies and research conducted on the existing education system in India showed around 1.2 lakhs schools are run by a single teacher

(UNESCO, 2021). These schools were primarily religious in nature, for example, 'pathshalas' for Hindus and 'madrasas' for Muslims, and were symbiotic with the country's social structure. After the British set up their rule in India, an extensive study was conducted on India's existing institutes or places of education. Research conducted by the British during 1800-1850 on the education systems of Bengal, Bihar, Madras presidency, and Punjab, was based on the caste break up, girls' education, and enrolment ratio. Studies on India's pre-colonial education system have indicated a deliberate and planned replacement of the indigenous education system by western pedagogy in the society to establish the superiority of the British Empire in India (Dharampal, 1983).

Around 32 million children were out of school even before the pandemic began (NSSO 2014). A recent survey by the Ministry of Rural Development of India highlighted that more than 36% of the schools operate without electricity. It can well be imagined that the condition of the underprivileged population during the pandemic with less than 15% of the population having access to the internet in rural areas (NSSO 2017-18), deteriorated.

With the already existing massive digital-gender divide in rural areas, this pandemic with the complete shift to the distance learning mode has created a situation that might lead to an increase in the adverse social practices, like child marriages and girl-child dropout rates, skewed labour force participation rate.

Although the western education system became heavily dependent on the online education provided through internet access, some of the most innovative and successful experiments done by the teachers in tribal, rural areas with limited internet access were based on the framework of the Indian indigenous education system.

Given the backdrop of the NEP (New Education Policy) 2020, which focuses on indigenous methods and knowledge, the use of these styles during the pandemic saw a success rate much higher than the standard teaching methods adopted by the teachers. NEP focuses on promoting inclusion and excellence in the Indian education system by strengthening both liberal and professional education.

During the lockdown, when there was an absence of post-colonial established methods of teaching, the world turned to e-learning methods. Remote learning became the way of education. While the world was fighting with the looming pandemic and teachers were learning new technology to combat the increasing gap in imparting education, rural India faced the impact of the largest digital divide. In the process of finding alternatives to western education, which was falling apart, indigenous education practices helped learn students lessons beyond the syllabus.

This paper brings forth such cases and successful experiments conducted across rural areas of Maharashtra, namely Salpe village (Lanja taluka, Ratnagiri district), Nande village (Mulshi taluka, Pune district), and Solapur District.

THEORETICAL BACKGROUND

The history of education in India traces back to the ancient, pre-historic period, where the use of vedas and upanishads was a way of learning. Research work and details of this education system mentioned in a book written by Professor Altekar, gives a detailed description of how a one-teacher school was the essence of the Indian education system. The backbone of the one-teacher school system in ancient India was mainly religion-dominated. The beginning of the education was done after the 'chaula' or 'mundan' ceremony, which was around the 4th-7th year from the birth of the child. This coincides with the age recommended by the NEP (National Education Policy 2020) for the beginning of education. This was irrespective of the caste system prevalent in the society at that point. This was supposed to be the initiation process for education for both male and female children.

Similar findings can be seen in the book written by Nurullah and Naik, which talks about the research studies conducted by a zealous missionary by the name of William Adam in the colonial period of India, in the provincial states of Bengal, Madras, and Bombay. This gives the details of the education system of pre-colonial India where the indigenous education system was prevalent in the preliminary schools. These elementary schools mostly were run in temples or private dwellings and dealt with rudiments of reading, writing, and arithmetic.

Dharampal in his book, 'The beautiful tree', recalls the famous statement given by Mahatma Gandhi at Royal Institute of International Affairs, London in 1931, where he firmly and fearlessly puts forth his concerns about the decay of the Indian education system due to the uprooting of the indigenous style of learning by the British.

Another famous book written on a similar subject written by Synderlal in 1929, named, '*Bharat me angreji raj*', depicts the entire picture of the pre-colonial to colonial India and the systems.

Pertaining to the present condition of the education system during the pandemic, several articles in newspapers talk about the digital divide between urban-rural India which deepened due to the economic crisis during the Covid-19 (Nikore & Uppadhyay, 2021). Although a general study done among states of India represents a better picture of Maharashtra, where the accessibility of digital resources to families with school-going children is more than 30%. The detailed, district-wise study done shows a stark difference in various districts within the state (ASER 2020).

It shows that around 33% of the children enrolled in the government schools in rural areas of Maharashtra do not have access to mobile phones, hence could not get access to study material during the pandemic.

Various reports and studies were done during the pandemic have highlighted the flaws in the western education system especially during the pandemic times, when it entirely became dependent on online education through digital resources.

As per the ground realities, even today, around 84% of the rural population in India has poor access to the internet and network connectivity remains a concern. Therefore, better and indigenous teaching-learning methods can be a way forward to successfully implement better education in these areas.

This paper highlights and compares two different case studies in other villages of Maharashtra and tries to indicate the adaptability and modified approach of teaching-learning necessary for the rural areas of India.

RESEARCH METHODOLOGY

Based on qualitative research design, this paper uses descriptive, collective-case study analysis for analyzing the work done by the teachers in remote, rural areas. For this purpose, the study uses primary data as its source of information. This analysis is based on the data collected through in-depth interviews, reports, and pictures from the teachers in these areas who have done commendable work during the pandemic. Data collected through various methods is then used and verified through triangulation of data methods, which tends to remove any bias brought in by one method of data collection.

The feasibility of these approaches has been studied by comparing homogeneous factors. The variables used for undertaking the comparative study are geographical area, the population of the area, gross enrolment ratio of the school, gender ratio, types of technology used for teaching during the pandemic, accessibility of the students to the digital devices and internet, teacher-student ratio and structure of the school. The outcome of this teaching-learning is then compared for the two cases and a conclusion is drawn based on the triangulation of the data collection approach.

The first case talks about the initiative taken by a group of teachers to train the primary teachers of rural areas of Maharashtra during the pandemic. This resulted in several significant outcomes in terms of the e-learning methods used by them to deliver education to the students belonging to the underprivileged and rural areas. The next two cases are a comparative study based on several homogenous parameters to find out whether rural areas of Maharashtra have been successful in implementing quality education during the covid pandemic or not. The samples selected for this study have been taken based on the accessibility of the network connectivity and major initiatives taken by a single teacher with the help of co-teachers. This research takes the comparative study and tries to find out the feasibility of e-learning in the rural area of Pune district (one of the most urbanized areas with good network connectivity) with the rural area of Ratnagiri district (one of the remotest and rural areas with bad network connectivity due to forests and western ghats).

3.1 Case Study 1: TSTS (Techno Savvy Teacher Secondary) Maharashtra

The initiatives to make teachers of public schools and zilla parishads in Maharashtra began much before the covid pandemic in 2011, when Mr. Sandeep Gund, a government primary school teacher from Pashtepada Thane, introduced the use of technology in classroom education. This model became renowned and successfully adopted by some thousand government schools in Maharashtra after 2015. It was also adopted by the CSR arm of a company Precision Camshaft Ltd. Later in 2017, TSTS started the digital education initiative for primary teachers in Maharashtra. It started in Solapur district under TSTS MAHARASHTRA (Techno Savvy Teachers Secondary Maharashtra), on 2nd April 2020, by formulating a team of teachers for digital training of the primary teachers in Maharashtra. In total, 13 teachers took part in the group initiative.

The objective of this group was to impart technical and digital education to motivated, hardworking, and creative Primary teachers of the government, zilla parishad schools.

The uniform methodology adopted for delivering education through e-learning became a success in all aspects. The concepts covered in this technical education course are given below:

Table 1: Digital learning curriculum

Using of DISHA app (government app for online teaching)	Construction of assignments using Google form
Use of various computer programs	Downloading Videos
Construction of educational E-content	Use of Cairn master app for educational applications Constructing videos from PPT presentations
Video editing using mobile and computer applications	Use of various software to make a video
Sound recording	Sound modulation using various software

Creating animated videos	Creating you-tube channel
Updating personnel videos on you-tube	20 common educational applications and their use
Handling platforms like google meet, google classroom, Microsoft teams, Zoom	Choice of free Platform and their rules

This course trained more than 5000 primary school teachers from Solapur, Pune and Ratnagiri districts.

Implementation procedure:

1. Created district-wise WhatsApp group
2. Created detail time -table for content
3. Used Microsoft teams for this training
4. The timing was from 9 am to 12 noon on weekdays
5. Created a smart PDF of all training videos for teachers who faced network issues and could not attend the training in real time

लोकमत

राज्यातील स्थिती : लॉकडाऊनच्या काळात मिळविले डिजिटल कौशल्य

पाच हजार शिक्षक बनले तंत्रसेही

ऑनलाईन प्लॅटफॉर्मचा वापर

गवई वीडीओबुद्धी शिक्षकसंग आसण्याक आसण्याचा प्रशिक्षण, ऑनलाईन वीडीओ वेळो वेळी उपलब्ध करून दिले आहेत. त्यांचा शिक्षकसंग वापरून प्रशिक्षण मिळाले. शिक्षकसंग तंत्रसेही कल्पनेचे अंभेदकील तयार केले आहे.

राज्यातील या शिक्षकनी प्रशिक्षण दिले

बी. बी. पाटील, एच. आर. पाटील, विजय बल्लभ, मनीषा सौम्यदास, प्रमोद मणुष, विनायक चौधरी, राजेश जाधव, राजकुमार चौधरी, सीमा पाटील (कोल्हापूर), एच. एन. अजय, सोहनराव कादम (शिंदडूर), मधुसेन मारे, राजेंद्र खांबे (रत्नगिरी), विनायक भागवत, मुनाजम पठाणी (पुणे), भुषण फारसे (धंडार), एमेल जाधव (अमळसरकार), वैभव कादम (कोल्हापूर), प्रदीप शेट्टे (सातारा), सागर रावडे (सातारा).

लॉकडाऊनच्या संधीचा पुणेपूर वापर

या प्रशिक्षणाच्या माध्यमातून शिक्षकसंग तंत्रसेही वीडीओ प्रशिक्षण त्यांचे कालम वापरून प्रदान केले. या प्रशिक्षणातून शिक्षक ऑनलाईन टेंडर विनायकसंग पठारत आहेत. हेच आसण्या प्रशिक्षणाचे या आसण्याची प्रतिक्रिया तंत्रसेही शिक्षक माध्यमिक सगुणने तयारपुन बी. बी. पाटील यांनी दिली.

1700

कोल्हापूर

1200

राजगिरी, सातारा, कोल्हापूर, पुणे (प्रत्येकी 300)

400

सातारा, शिंदडूर (प्रत्येकी 200)

1600

अंभेदकील प्रशिक्षण

100

मुंबई



Image 1. Training of teacher programme in local newspaper and the team of teachers providing training on digital literacy

Source: Lokmat Newspaper 2020 and authors

Outcome:

This training reached to 5000 plus teachers in rural areas of Maharashtra and helped them to rapidly adapt to the suddenly changed the pattern of education due to the pandemic. Due to this digital literacy, teachers started applying this knowledge to create their personal videos. Teachers from rural areas started creating constructive evaluations. Some of them made their own mobile apps and also personal websites. Many of these digitally trained teachers made their own you-tube channels and also created animated videos of concepts. They then shared their content on the Mega Platform of Smart PDF. The universal rich content was arranged Standard wise and made available across Maharashtra, creating a mega information exchange e-platform of teachers, for teachers and absolutely free and transparent. This Platform of digital resources has been used as a powerful teaching tool by the rural teachers of

Maharashtra and has created a completely tech-friendly scenario among the students as well as teachers of rural areas.

3.2. Case Study 2: A report from Salpe village: Project: 'Shikshan Aamchya Dari' or doorstep education

This case study is based on the adaptation of e-learning in a different way by taking it to the doorsteps of the students of Salpe village in Ratnagiri district.

The Salpe village in Lanja region from Ratnagiri district is an interior rural region with ample natural resources, rich agriculture and diverse flora and fauna. Although urbanization has started happening, net connectivity is still poor in the region due to natural barriers like ghats and dense forests. The economy is mainly agriculture-based hence children help their parents in various household and agriculture-related work like feeding cattle, watering fields, working in housework etcetera. During the pandemic, when schools were closed, there was a huge problem of network, and online education was not feasible in this area. Mr. SP (Principal of Salpe Village Zilla parishad school), and his team started a project called '*doorstep education*' or '*Shikshan amchya dari*' (*Marathi*). The team of teachers communicated with parents and got ready with a plan for home visits. The timetable for home visits was prepared to mention activities like dictation, poetry recitation, story reading, and basic mathematics.

During the day when parents worked on the farm, students used to be alone at home. The books from the school library were made available to them by the school teachers at home. The initiative was named as '*APJ Abdul Kalam reading platform*', under which the school library books were delivered to children at their homes. The students studying in college became volunteers to help with the reading and writing of these school children.

"Education is not a sole responsibility of a teacher but it's a collective responsibility of parents and society' this thought was actually implemented and hence educational environment was created in the region"- Mr.SP(Principal-Salpe village Zilla parishad school)

From July 2020, the following points were included during home visits to the students:

1. Homework
2. Self-study
3. Hobbies list
4. Studies update and evaluation

Teachers coming home and meeting and working with children created motivation and positivity among students and parents. Students showed active participation and gave day-to-day updates of their studies. *'Learning is the natural urge of every human being if it nurtures properly then children learn themselves'* this is the outcome and observation of this initiative (Mr. SP Principal, Zilla parishad Primary School (Salpe village), Lanja district, Ratnagiri).

Table 2: Details of the project in Salpe village

Total number of students participated in this project	24
Standards covered	3 rd to 8 th
Duration of the project	8 months
Population of villages	337
Number of male and female students	15 male and 9 female



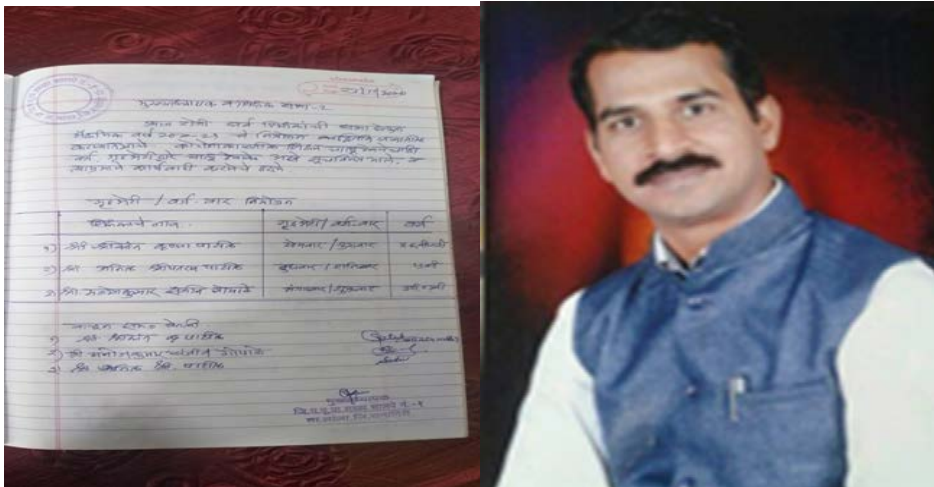


Image 2: Mobile reading platform 'books at our doorstep', doorstep learning and Records of home visits and Mr.SP (Principal of the school)

Source: Authors

Outcome:

This initiative allowed children to play freely, pursue their hobbies, play games, enjoy farm work in nature, and help parents with housework in their spare time. Children also enjoyed programs like 'gali gali sim sim' and 'teele milli' regarding educational content on Doordarshan.

This initiative created a bonding between students and teachers. Every stakeholder became a 'guru'. Empathy and emotional well-being were maintained. The lesson was learned by teachers to overcome diverse situations and find the solution with a constructive approach.

3.3 Case Study 3: Multi applications of digital education in Nande village, Mulshi Taluka, Pune district

Mrs. NH, teacher of Zilla parishad Prathamik school in Nande village of Pune district described the various technical applications and digital platforms which were used during the pandemic for the students of zilla parishad school in Nande village.

When the pandemic started, a survey done among the students revealed that only 50% of them had mobile phones. This created a limitation for the digital learning platform

to be used by the teacher. They came up with ideas to share the mobile phones with other students in pairs for learning during online classes. The rest who had absolutely no access to the mobile devices, 4-5 volunteers were requested to conduct mini-schools for a group of 4-5 students in their area. These volunteers were paid by the zilla parishad teachers, who paid them a part of their own salary every month. Another challenge faced by these teachers was the reluctance of students to install platforms like zoom and google meet. After a few days, they felt encouraged and started sharing their screens, were able to create links, and also made their own discussion groups for peer learning. To make the habit of reading, they started a project, where the teacher used to send an audio story every evening. The stories of authors like MP, RT, SM, SS were made available to students in the audio form. Also, there were stories written by one of the co-teacher of the school and FK. The students listened to these stories at bedtime with attention. Students from the English medium also loved these stories. They purchased these storybooks and started reading them. From this project, students developed the ability of active listening and active reading.

For children who needed help in reading, these teachers used an application like 'read along'. In this app, there is a facility to get a star for what you read. With the help of this system, students started to keep their reading records, which benefited them.

There were topic-wise videos on government apps like 'Diksha' and 'Digital Sakshar'. Students could watch these videos whenever they wished. Along with Google meet, assignments were designed using google forms. The government started a test series with automated replies. Children got the benefit of this project. MKCL (A government wing of digital education) provided their own assignments.

DETC (District Education and Training Centre) has implemented a project for guidance to parents called 'Palak Mitra' through which they explained the role of parents in the education of their child.

Through 'Palak Mitra' there were 6 guidance videos prepared and played through youtube for parents. In this way, the participation of parents was actively communicated to them. Many teachers started their own youtube channel. One of the

videos of Mrs. H (teacher and primary source of this information), showed 43,000 views. This is not a small number for a non-professional government teacher. Voluntary organizations like the Agasti foundation, organized workshops on topics like introduction to different foodstuff, match stick puzzles, and also Warli painting. Online games were also organized for children.

To encourage children to learn, virtual trophies were introduced as a token for their reward for doing homework, for good artwork, and to encourage their overall motivation.

The reward system proved to be successful for retaining their attendance and improving their overall performance.

Digital education about creating passwords was also organized. Also, awareness was created regarding fake messages and the information given to parents regarding how to lock the apps when they are not around to monitor their children.

Outcome:

The screenshot displays an educational app interface. On the left, a question is presented in Marathi: "श्री गणेश सार्वजनिक मित्र मंडळाची गणेशोत्सवाची एकूण वर्गणी 4,35,250 रु. जमा झाली. त्यातील 1,50,000 रु. मंडळाने वृद्धाश्रमास देणगी दिली. 2,25,000 रु. दुष्काळग्रस्तांसाठी निधी दिला व 20,000 रु. गणेशोत्सवासाठी खर्चकेले तर आता मंडळाकडे वर्गणीची किती रक्कम बाकी आहे? वर्गणीची शिल्लक रक्कम काढण्यासाठी उदाहरणातील माहित असलेल्या किमती घेऊन येथे दिलेल्या उदाहरणाच्या गणिती मांडणीपैकी चुकीची मांडणी कोणती?" Below the question are two radio button options: $4,35,250 - (1,50,000 + 2,25,000 + 20,000)$ and $(4,35,250 - 1,50,000 - 2,25,000 - 20,000)$. A "Save & Next" button is at the bottom left. On the right, a sidebar shows "Time Remaining: 01:25", "User: 9923400040", and "Number of questions: 30". A progress indicator shows 15 answered questions (green) and 1 not answered (red). Below this is a numeric keypad with digits 1-30, where the number 16 is highlighted in red.

Image 3: Evaluation through an app

Source: Authors



Image 4: Digital trophy and creativity by students of Nande village

Sources: Authors



Image 5: Educational Programs on Doordarshan (The National channel of India)

Source: Primary Study

	Case 2 (Salpe village)	Case 3 (Nande village)
Area of study	Salpe village, Lanja Taluka, Ratnagiri district	Nande village, Mulshi Taluka, Pune district
Population	337	1600 approx.
Gross Enrolment Ratio in thousand	255 (Ratnagiri district)	345 (Pune district)

Gender Ratio	63:37	73:27
Types of technology used	No apps, as the students had no accessibility to digital devices and platforms	zoom, google meet, MKCL platform, youtube stories
Accessibility to digital devices and internet	No	initially 50% , now 90%
Teacher-Student Ratio	1:24	1:30
Apps and platforms used	None	Storytell, Diksha, MKCL app for evaluation

Results: Comparative analysis of the two villages

Table 3: Comparative analysis of two villages

Source: Authors

DISCUSSION

The comparative analysis done between the zilla parishad schools of two different districts of Maharashtra within homogenous variables shows the different degrees of adaptability of teachers and students of various regions based on their geographical location and accessibility to digital devices and internet access. Whereas, the zilla parishad school of Nande village in Pune district has been extremely successful in adapting and implementing e-learning through various digital platforms to its student population. The same has not been successful for the zilla parishad school of Salpe village in Ratnagiri. This happened because of the geographical limitations which create natural barriers to internet connectivity. The accessibility of digital devices like mobile phones and television sets have also been a major constraint in the dissemination of online education to the students of this region. The teachers of the Salpe village thereby, despite getting trained in the digital programs, could not use online teaching during the pandemic because of the lack of accessibility of digital devices and internet access to the students. They, therefore, modified the pattern of dissemination of education to 'doorstep education', which became a more effective and successful model of teaching than even during the normal times.

This study thereby tries to highlight the fact that e-learning cannot be uniformly implemented in all the regions of the state or country simultaneously. The success of online education through e-learning is based on the accessibility of digital resources, internet connectivity, and network status for the population of that region. There should be enough flexibility provided to the teachers of the zilla parishad schools of that area to cater to the needs of the students in the respective region. The one teacher education system model, which relates back to the indigenous method of teaching during the ancient times in India, seems to be still significantly successful in the remote parts of the country which has limited access to modern digital resources and network connectivity.

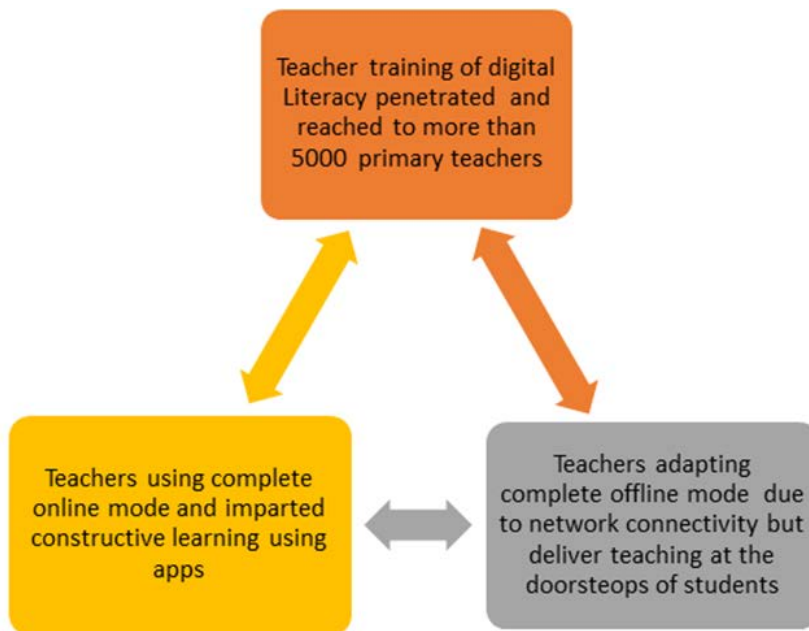


Figure 1: Model showing the linkage between case 1, case 2, and case 3

Source: Authors

CONCLUSION

India remains a predominantly agriculture-based economy, largely connected by towns and villages, where digital access for school education remains strictly limited. In such times there can be many noteworthy methods teachers may have used across the country. We have highlighted representative case studies that are specific to

region, geography, and availability of resources. Hence these case studies cannot be generalized to give a larger perspective of digital education. But it definitely highlights the willingness, ability, and adaptability of school teachers. It has shown the potential of rural teachers and given the opportunity, they can guide the important transition in education, happening in the near future.

The government should encourage ground reality surveys of innovative methods used by teachers in covid times and a platform should be created to compile all such techniques, which will act as an excellent resource for future education. The pandemic comes once in a century, but the work done by teachers in rural areas in these difficult times acts as a future reference guide to deal with such adversities. It can serve as a document of the historical record for future generations. Although digital learning has become 'the new normal and remains after the pandemic, the role of indigenous education is more highlighted in rural education, where accessibility and network remain a challenge. The schools in these case studies having a single teacher for all subjects showed the indigenous approach even in a digital way.

The case study of teacher training of digital literacy has created an environment of cooperation, collaboration, and skill-dominated progression. This case study can be a role model for other states in India as well as for other countries, where there is poor digital access to the majority population. This model can be useful, especially for the African countries and south-east Asian countries, like Bangladesh, Nepal, and Sri Lanka. The digital education of teachers facilitates quality digital learning for students. The future model of education is the blended model. To restructure and adapt to a blended model of education, such initiatives should be implemented with government funding to ensure the utmost quality of teacher training and better student output (India G. o., 2021).

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