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Perspectives of Virtual Classroom in Indian Schools: Implications of NEP 2020

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ABSTRACT

Education is equally important for human survival such as the availability of fine food, drinking water and affordable living spaces. The notion of the virtual classroom is an innovative and techno-oriented approach for learners' progress and assessment. The findings of this study indicate that an egregious shift of traditional classes has insisted to installed cohesive interventions and concrete policy attention to designing the contours of future strategies and their speedy implementation. Evocative, digital divide deployed as a long-term grueling assignment and other causes of inequality in the online learning process including class and gender. Finally, it can be stated that a multi-pronged planning is needed to address the plethora of challenges associated with online teaching-learning in Indian schools.

Keywords: Challenges, Classroom, Policy, Technology and Virtual-learning

This paper explores the concept of the virtual classroom in Indian schools. *The term 'virtual classroom' originates from the use of computer-mediated communication to establish an electronic environment where the communication forms of a classroom, like discussions and lectures, are possible* (Husu, 2000). More specifically, a virtual classroom is an online learning environment (Yilmaz, 2015). In the recent past, there has been growing evidence in using modern information and communication technologies to promote the teaching-learning process in educational activities. In this context, it is clear that a large number of institutions have been involved in promoting various platforms to improve digital learning. This study presupposes that by examining this phenomenon, the future perspective of virtual classrooms in Indian schools is a still area of serious consideration. In the education sector, video-based lecture (VBL) is a teaching format that has gained prominence in recent decades (Vincent Lau *et al.* 2017). Government of India (GoI) has already introduced several digital-learning platforms that deliver access to a large number of courses and linked them to online-teaching to ensure learning never stops. The current situation indicates that, Government of India (GoI) is planning to promote the idea of virtual classrooms as an alternative option of teaching-learning processes in the schools and other educational institutions. For instance, National Education Policy 2020 (NEP 2020), has recognized that "*the existing digital platforms and ongoing ICT-based educational initiatives must be optimized and expanded to meet the current and future challenges in providing quality education for all*". The Indian education system is one of the largest in the world. For instance, as per the latest round of UDISE Plus (2021-22) nearly 14.89 Lakhs schools exist in the various parts of India. Further, Indian school structure is divided into various levels such

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as Elementary Schools (80.3 percent), Secondary Schools (10.1 percent) and Higher Secondary Schools (9.6 percent). It further indicates that both administration and management side have faced serious challenges and enormous brainstorming to promote teaching-learning through remote learning. In the era of modern technology, women's education is playing a vital role in determining the quality and access of school education. In the recent past, much has already been written about teaching effectiveness and its methods. The modern technology used seems to open new possibilities for teaching and learning in school and classroom settings (Falck *et al.* 1997). This research work aims to describe the instructional processes of a virtual classroom in Indian schools and highlights grave concerns for its future implementation. In the context of education learning, whether it is online, face-to-face, or a blending of both, is to structure the educational experience to achieve defined learning outcomes (Garrison & Cleveland-Innes, 2005). Thus, the purpose of this study is to explain how virtual classrooms influenced the quality of teaching-learning in Indian schools. The following research questions may help to initiate deliberations on this debate:

1. To what extent will the norms of virtual classrooms improve the vision and quality and outcomes of the teaching-learning process with multidisciplinary perspectives?
2. What constraints and challenges virtual classroom is encountering to influence the learners' ability, communication skills, digital proficiency and professional and teaching standards?
3. What pedagogical planning can planners utilize to support teaching-learning remotely?
4. In what ways policy dialogues, deliberations and strategic reflections would provide appropriate measures, joint action plans and mechanisms to improve the performance of learners through online curriculum streaming and teaching and assessment methods?

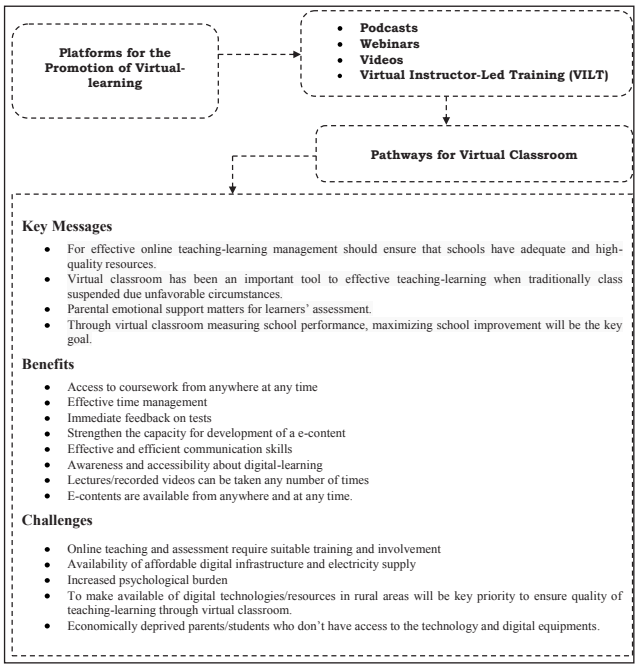
Role of Pedagogical Strategies for Online Teaching-learning: Education and school practices can be described and illustrated as a practice involving multiple and diverse actors, entities, relationships, and viewpoints, as well as influencing and challenging issues of concern (Salavati, 2016). In the light of the current scenario, online teaching learning is an alternative and innovative approach to ensure that learning will never be interrupted, no matter what. Through this approach, teachers and management bodies are responsible to make teaching practices more effective and appropriate for learners. For instance, the online teaching environment (OTE) has created a multilayered approach to increase the likelihood of subsistence when physical interactions between teachers-learners' are not being scheduled. The virtual classroom has also been helping teachers/learners to enhance their technical skills, digital literacy and effective assessment through online examinations. Indeed, as noted above, virtual learning may be extremely effective for teaching-learning process, training and lifelong learning and raise awareness about existing learning solutions although it has its own limitations as well. For instance, "*under the shadow of COVID-19, the lives of millions of children have temporarily shrunk to just their homes and their screens*". In the light of this, millions of children are at increased risk of harm as their lives move increasingly online during lockdown in the COVID-19 pandemic. Learners on the other hand were less optimistic about their understanding such as textbooks reading habits, writing skills, ability to deal in physical space and interaction. In order to monitor effective planning and functionality of online teaching-learning, the Ministry of Education (MoE) has developed detailed guidelines in 'PRAGYATA' and webportals like; *Swayam Prabha*, PM e-Vidya Programme, E-Patashala NISHTHA 1.0 (Elementary Level), NISHTHA 2.0 (Secondary Level) and NISHTHA 3.0 for NIPUN Bharat and DIKSHA (Digital Infrastructure for School Education) are widely used to promote its effectiveness and strategic implementations in the State/UTs.

Explore Ways to Provide to Monitor Reach and Effectiveness of Virtual-learning: In order to estimates the techno-based efforts and e-learning, *"CBSE conceptualized 'Vidya-Daan' a program based on crowd sourcing of content from teachers and meant to synergize countrywide developments by providing schools and teachers from the Metro cities to the smallest villages with good quality e-content that can be used by them anytime, anywhere at no cost"* (GoI, 2020). Another progrmme introduced by the Government

of India is called 'CBSE-Shiksha Vani' and available on Play Store for Android users by which members can effortlessly receive the audio/video information files on their cell phones almost instantaneously as and when uploaded by the Board. Mukt Vidya Vani (MVV) is an open education radio facility that promotes educational content for effective teaching-learning. In continuation, Radio Vahini FM 91.2 MHz, is another initiative which leads to promote learning contents to the learners in the remote areas and it operated through community radio station of the National Institute of Open Schooling (NIOS). Radio Vahini has largely benefited the school dropouts, learners enrolled through ODL and students having multiple disabilities. Online learning platforms such as *Diksha, Swayam and Swayamprabha* will also be leveraged for creating virtual labs so that all students have equal access to quality practical and hands-on experiment-based learning experiences (GoIa, 2020). In order to promote effectiveness of virtual-learning, ensuring continuity and formative assessment and monitoring are the essential tools to espouse adaptability and curriculum mapping. In addition, several techno-based initiatives have already been launched to promote and encourage virtual-learning are described below:

1. ICT Initiatives of MHRD - Technology Enabled Learning
2. National Digital Library of India
3. E-PG Pathshala, E-Shodh Sindhu: Consortium for Higher Education Electronic Resource
4. Online access of NCERT textbooks this platform provides textbooks of all subjects published by NCERT for classes I to XII in Hindi, English and Urdu.
5. National Educational Technology Forum (NETF) to bolster the digital infrastructure, E-content and capacity building to enhance teaching-learning, assessment, planning and management.

The NEP 2020 has set out to endorse e-content on various platforms to offer a perception on its benefits, along with challenges that need to be considered as institutions, learners', and teachers. Effective pedagogical practices indicate that, fineness of teaching-learning and affordable digital infrastructure particularly in rural schools with large numbers of low-income students raising the concerns of disparities in educational outcomes.



Source: *(Prepared by Author)*

Note: *Based on the reviews and evidences mentioned in the periodicals and government gazettes*

Fig. 1: Virtual Classroom in India: A Priority Response

Data Base and Methodology

As per the latest round (2021-22) of Unified District Information System for Education (UDISE+), nearly 14.89 Lakh schools are located in the various parts of the country and that are deeply responsible for effective implementation, strategic planning and concrete decision-making. The study is confined to the school administration, learners' participation, familial involvement and government interventions to promote and strengthen the proximity of virtual classes and its future perspective. Data for the study comes from UDISE+ (2021-22), NSSO 75th Round July 2017 – June 2018 "*Household Social Consumption on Education in India*'' and for the purpose of content analysis nearly 49 editorials were reviewed from national and international newspapers to investigated the various perspectives of virtual classrooms in the different sphere. In response to these challenges, mixed methods research refers to research that integrates both qualitative and quantitative data within a single study (Halcomb & Hickman, 2015). More accurately, *"Mixed methods research is the type of research in which a researcher*

or team of researchers combines elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and corroboration" (Schoonenboom & Johnson, 2017). In order to examine outlooks of virtual classrooms in Indian schools, the combination of both quantitative and qualitative methods can noticeably improve the quality of outcomes and policy dimensions to strengthen the pedagogical structure.

Rationale for Using Mixed Methods

This piece of research addresses the issues or concerns that are directly linked to the effective implementation of digital-learning and envisages its future perspective. Appropriateness of virtual classroom focuses on rigorous practice of both qualitative and quantitative research exploring the effectiveness and feasibility for concrete outcomes. For the purpose of this research work, the overall goal of mixed methods research would be regularisation of online teaching-learning and make it an eternal part of continuous school improvement. Lastly, these methods can assist to understand a plethora of synthesis related to a virtual classroom in India especially in remote areas. In addition, qualitative content analysis can be used in either an inductive or a deductive way. Both inductive and deductive content analysis processes involve three main phases: preparation, organization, and reporting of results (Kääriäinen, 2014). Content analysis describes a family of analytic approaches ranging from impressionistic, intuitive, interpretive analyses to systematic, strict textual analysis (Hsieh & Shannon, 2005). It further indicates that content analysis was used primarily as a quantitative research method with text data coded into explicit categories and then described using statistics.

RESULTS AND DISCUSSION

The future perspective of virtual classrooms has been deeply determined by several dimensions and that could measure the operationalised activities and outcomes of e-learning. In the light of this, digital learning resources have significant potential to improve access to information and learning resources (Thoma *et al.* 2019). Particularly in the Indian context, efforts to make resource mobilisation promising for online teaching-learning will be a sound challenge to both private and public sectors. For the purposes of effectiveness of virtual classrooms, leveraging digital technologies and creating a technology-enriched curriculum for learners. As per the findings from NSSO 75th round indicates that about 4.4 percent of rural households and 23.4 percent of urban households possessed computers. As far as internet facilities are concerned only 23.8 percent of the households in the country had internet access. The proportion was 14.9 percent among rural households and 42 percent among urban households.

Table 1 presents, persons of age 5 years and above, information was collected on whether they were able to operate computer, their ability to use the internet was found higher in urban areas as their rural counterparts. It is evident from analysis briefed in Table 1, the picture of digital infrastructure in rural India looks different and more complex. The development of digital literacy and infrastructural support has become more widespread as digital board, digital teaching system, digital devices with internet facility and their costs can be a big deterrent for learners' and that can create barriers for virtual classroom in rural settings.

In urban areas, the distribution across UMPCE classes differs from the rural areas in the following respects, household possessed computers was much higher for each of the UMPCE class as compared to rural areas. Secondly, the key confronts of virtual-learning was disparity in access from internet connections to digital devices like computers, laptop and smartphones found higher in rural areas.

It is important to note that, India has one the largest school structures in the world and has enormous opportunities for learners' attainment and their personal and social development. The data portrayed in Table 3 indicates that out of 14.89Lakhs schools only 5.04 Lakhs schools have internet connections. In order to promote the efficacy of virtual classrooms, the accessibility of computers and trained staff having concrete technical skills are the key ingredients. Table 3 also shows that only 5.90 Lakhs school having computer available. This evidence suggests that trained staff having concrete technical understanding and their appointments and regularisation can play a crucial role to determine the strategic implementation for effective E-learning.

Table 1: Percentage of persons of age 5 years and above who able to operate a computer/able to use intrnet

Place of Residence	Age of the person	Computer			Internet		
		Male	Female	Person	Male	Female	Person
Rural	5-14 years	5.6	4.4	5.1	6.0	4.1	5.1
	15-29 years	29.4	17.6	23.7	38.8	21.3	30.4
	15-59 years	16.4	8.6	12.6	22.9	10.9	17.0
	60 years and above	1.5	0.3	0.9	1.7	0.5	1.1
	15 years and above	14.6	7.6	11.1	20.3	9.6	15.1
	5 years and above	12.6	7.0	9.9	17.1	8.5	13.0
Urban	5-14 years	22.5	19.7	21.3	20.9	18.1	19.7
	15-29 years	60.6	50.9	56.0	69.4	56.3	63.2
	15-59 years	44.3	31.4	38.0	52.9	36.0	44.7
	60 years and above	14.0	4.8	9.5	15.3	5.3	10.3
	15 years and above	40.8	28.2	34.7	48.5	32.3	40.6
	5 years and above	37.5	26.9	32.4	43.5	30.1	37.1
Rural + Urban	5-14 years	9.9	8.2	9.1	9.8	7.6	8.8
	15-29 years	39.0	27.6	33.6	48.2	31.9	40.4
	15-59 years	25.0	15.5	20.4	32.2	18.5	25.5
	60 years and above	5.3	1.7	3.5	5.8	1.9	3.9
	15 years and above	22.7	13.9	18.4	29.0	16.5	22.9
	5 years and above	20.0	12.8	16.5	25.0	14.9	20.1

Source*: NSSO 75th Round July 2017 – June 2018.*

Table 2: Percentage of households with computer/internet facility for each quintile class of Usual Monthly per Capital Expenditure

Quintile class of UMPCE	Computer		Internet	
	Rural	Urban	Rural	Urban
0-20	1.6	7.5	6.6	19.8
20-40	2.4	9.9	9.2	29.4
40-60	3.3	16.0	12.4	38.0
60-80	3.4	24.0	15.0	46.3
80-100	9.9	45.5	27.1	61.6
All	4.4	23.4	14.9	42.0

Source*: NSSO 75th Round July 2017 – June 2018;* **Note***: Usual Monthly per Capita Expenditure (UMPCE).*

Results from Content Analysis

This section of the paper results from content analysis describing strategies and challenges to improve online learning environments for effective teaching practices. Indeed, as noted above, shared governance practices, management in resource allocation and community involvement has designed the scalability of a virtual-learning environment in school. In totality, cognitive simulations can support effective skill development and productive outcomes.

Descriptive statistics described in the Table 4 portrays that, for improving online learning exercises various indicators have been installed to measure the functionality of virtual-learning to strengthen learning modalities for effective continuity of learners. In the constructivist perspective, the results of Table 4 show that, advocate for availability of digital devices and cost of connectivity and provision of affordable access to children especially maginalised and tribal communities in the remote areas. In terms of policies and initiatives, gaps in accessibility of learning resources, strengthening family and community guidance strategies to promote home based-learning and learners' motivation and engagement would be the key priorities. Consequently, articulation and reinforcing the pedagogical structure to ensure formative learning assessment in virtual learning planning.

Table 3: Percentage Share of Schools with Electricity Connection, Computer Available, Internet Facility and at least one Teacher Trained in use of Computer in India 2019-20

Indicator	(I-V) PS	(I-VIII) UPS	(I-XII) HSS	(VI-VIII) UPS	(VI-XII) HSS	(I-X) SS	(VI-X) SS	(IX-X) SS	(IX-XII) HSS	(XII-XIII) HSS	Total Number of School
Rural	55.14	21.72	3.17	6.92	2.29	3.73	2.93	1.93	1.53	0.64	**1234788**
Urban	31.28	29.08	9.92	3.23	3.71	10.95	4.1	2.39	2.14	3.2	**254327**
Total	51.07	22.97	4.32	6.29	2.53	4.97	3.13	2.01	1.63	1.08	**1489115**
Number of Schools having Electricity Connection	48.02	24.44	4.93	5.72	2.82	5.56	3.45	2.05	1.8	1.22	**1289245**
Number of Schools having Computer Available by School	26.83	27.47	10.08	4.65	5.68	10.25	6.43	3.4	2.93	2.29	**590468**
Number of Schools having Internet Facility	31.03	26.14	10.68	3.92	5.82	9.65	5.38	2.34	2.61	2.44	**504989**

Source: *UDISE+ 2021-22.*

Table 4: Indicators used for Measure Effectiveness of Teaching-learning Process during Virtual Classes

Indicators and Background Characteristics		Yes	No	Mean	Std. Deviation	Variance	Skewness	Kurtosis
Learning Collaborations	Decision-Making	53.06	46.94	.53	.504	.254	-.127	-2070
	Role of School Administration	65.31	34.69	.65	.481	.231	-.664	-1.628
	Family's Socio-Financial Status	51.02	48.98	.51	.505	.255	-0.42	-2.085
	Institutional Interventions	48.98	51.02	.49	.505	.255	.042	-2.058
	Availability of Internet, Smartphone and Computer	89.80	10.20	.90	.306	.094	-2.713	5.588
Structured Cooperative Learning	Psychology Motivation	20.41	79.59	.20	.407	.166	1.515	.307
	Teaching-Practices	67.35	32.65	.67	.474	.224	-.763	-1.479
Protective Health Measures	Mental Health Experiences	10.20	89.80	.10	.306	.094	2.713	5.588
	Eye Strain	12.24	87.76	.12	.331	.110	2.377	3.803
	Other Ailments	12.24	87.76	.12	.331	.110	2.377	3.803
Supporting Formative Assessment	Assessment/Examination	71.43	28.57	.71	.456	.208	-.979	-1.088
	Quality Assurance and Management	73.47	26.53	.73	.446	.199	-1.097	-.832
	Feedback for Effective Online Teaching-learning	77.55	22.45	.78	.442	.178	-1.363	-.151
Comprehensive Package for Policy Support	Recommendations	79.59	20.41	.80	.407	.166	-1.515	.307
	Implications for Implementation	77.55	22.45	.78	.422	.178	-1.363	-.151

Source*: Evidences mentioned in the National and International Newspaper's Editorials (2021-22).*

Call for Action: Policy Brief

Virtual environments (VEs) have been increasingly used in education, skill training, gaming, and the study of human behavior (Seo *et al.* 2019). In order to explore the potential role of virtual classrooms educators are often challenged by the need to strike a balance between delivering content to meet the course objectives and keeping learners engaged in the class activities (Sriharan, 2020). In India, millions of learners' still do not have access to

suitable smartphone, radio, podcast, community radio, interactive voice response service (IVRS) and television with DTH Channels and other methods of broadcasting. For imparting education through e-content/online learning, government and school management needs to strengthen basic structure, infrastructure and financial aids. Indeed, as noted above, this research work focused on the virtual classroom and its future perspective in Indian schools and identifying patterns of a new arena of teaching-learning. The purpose of this paper was to extend these findings by identifying the patterns of online teaching practices, E-curriculum framework and their effective implementations.

Another area of concern is safety from cyber-bullying, the hacking of personal information, access to illegal and access of banned materials in the school premises. Findings of this study suggest that collaboration between schools, families and administration can reduce the burden of mental and psychological pressure of students. For better perspective, comprehending policy perception indicates that online technology has effectively and appropriately fortified the virtual learning environment and created a space for dynamic hybrid mode of learning. Amid debate over the virtual classroom in Indian schools, preparation and perspective needs to be changed for improved outcomes. For instance, Open Online Courses (OOCs), National Digital Library of India and Swayam Prabha, E-Pathshala and Umang (Unified Mobile Application for New-age Governance) are the key initiatives that can providing digital-learning content, broadcasting of educational programs through enhance technology and comprehensive distance education resources for different education levels. As it has also been evident from above analysis, enabling resources of school such as availability of computers and electricity connections are essential for online or digital education especially in the rural areas. More evidently, as per the New Education Policy 2020, "*existing digital platforms and ongoing Information and Communication Technology (ICT)-based educational initiatives must be optimized and expanded to meet the current and future challenges in providing quality education for all*". It has also elaborately; Information and Communication Technology (ICT) based interventions can influence the paradigm of both curricular and pedagogical structure to determine subject depth, critical thinking and adherence to quality commitments. Results from above findings describe the benefits of online/digital education have reinforcing pedagogy, assessment and e-governance etc. Online education structure would provide a comprehensive professional development (CPD) for both teachers and learners' and help them to prevent obstacles to achieving novel educational heights. It is suggested that curriculum and resources, preparedness of teachers and schools, availability and adequacy of technology and access to effective online learning platforms have helped to extend capacity and horizons of virtual classrooms in India.

The National Education Policy (NEP) 2020 is a comprehensive policy framework which outlines multiple folds to strengthen Indian education system. In the recent years, government of India has introduced several e-learning platforms for learners at different levels. In addition, DIKSHA, SWAYAM, SWAYAMPRABHA and other initiatives will also be leveraged for creating virtual labs so that all students have equal access to quality practical and hands-on experiment-based learning experiences (NEP, 2020).

The policy perspectives and way forward of virtual-learning indicates that, State/UTs have developed certain measures/guidelines/framework to cope with the strategies and challenges linked to online learning especially, for marginalized, tribal and Children With Special Needs (CWSN) communities. The Government also needs to devise innovative ways to advocate monitor learning behaviours and outcomes and also to take children's needs and their rights sufficiently into consideration.

CONCLUSIONS AND WAY FORWARD

To sum up, the paper concludes by suggesting reinforcing structured pedagogy, learner support, assessment, follow-up and review for evidence-based policies and their stringent implementation for future roadmap. It is important to ensure the remote learning modalities in rural areas, systematic efforts will be required to develop well-structured action plans and reduce inequalities in educational attainments. In addition, preventing the protective role of the school management especially for those most vulnerable and disadvantaged groups. Findings of the paper indicate that mobilizing

resources for adequate financing for education and steps to ensure monitoring and support digital learning and its efficacy could be challenging to make virtual learning in standard routine. Evidence also shows that adopting a holistic approach, promoting the blended (Hybrid) mode of education and budgetary intervention are key to the future achievements. Notably, there is a need to increase the coverage of basic digital infrastructure, virtual labs, provision of electricity and electronic devices like; Smartphones, Laptops, Computers, and internet connectivity. At the end, Government of India (GoI) should strengthen institutional interventions and strategic partnerships that ensure access to learning for all pupils, especially the most vulnerable and underprivileged.

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