

Use of EdTech in Indian School Education during COVID-19

A Reality Check

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The pandemic has exposed inequity as an immediate concern. This article draws its insights on ground issues faced by schoolteachers from across the country in their efforts to connect with their students during phases of online teaching at a time of social distancing. By reflecting on these insights, we indicate some aspects that can be focused on for systematic strengthening by the government and other organisations in the coming months, for a relatively seamless and synchronous teaching–learning experience.

This article is based on the Ground Assessment Survey conducted as a part of the Connected Open Online Learning, initiative of TISS, to support teachers, students, teacher educators and student teachers during COVID-19 pandemic. The survey was supported by grants from the PMMMNMTT and the Tata Trusts. The survey team included Ramaa Muthukumar, Shashank Parimi, Manshvi Palan, Geetha M, Soham Bhattacharya, Dhipthi Dhona and Ramesh Khade.

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The Ministry of Education and state governments are struggling to find an inclusive solution to the crisis in school education precipitated by the COVID-19 pandemic, providing various “alternative schedules,” “Standard Operating Procedures” and online teaching-based solutions (*Times of India* 2020; *Hindu* 2020). The search for a meaningful response is already showing its Janus-faced character primarily on account of the extent to which digital access can be a part of the solution. A divide is emerging as an issue of concern, and estimating the size of this problem is essential if we want to find meaningful solutions to a situation that seems unlikely to return to normalcy and business-as-usual until March 2020. At a time when accessing new data on the current status of digital access of students and their teachers is difficult, this article presents findings from a small online survey we conducted in which 212 schoolteachers from across the country participated, to understand their situation, teaching–learning conditions and challenges and those of their students, as perceived by them.

The Survey

The survey was designed to assess ground preparedness in the use of education technology (Edtech) by teachers during COVID-19. A total of 212 teachers from urban (145) and rural (67) (see detailed respondent profile in Table 1, p 17) areas responded to our invitation to participate in the online survey they received via WhatsApp, Telegram and email. The link to the survey was sent out by us through our various social media channels and known teacher group contacts, whom we also requested to further broadcast the invitation. The survey tool was available in Hindi and English¹ and consisted of 35 close-ended

and 5 open-ended questions. Key information areas included the respondents': (i) current key concerns (personal and professional), (ii) access to devices and internet, (iii) nature of online activities, (iv) desired professional development in the near future, (v) support expressed for teaching through EdTech, (vi) opinion regarding ease and difficulty of teaching topics online, and (vii) suggested strategies for continuing education in the times of COVID-19. Responses obtained between 21 April 2020 and 31 May 2020 have been included in this analysis. Of the 212 teacher respondents, 184 responded to the English tool and 28 to the Hindi tool.

Teachers were from government, private and aided schools from urban and rural areas. The sample included men and women with about 50% of them being in the age group of 36 to 50 spread over different states—Goa (49), Telangana (44), Haryana (30), Mizoram (23), Maharashtra (16), Chhattisgarh (13), Karnataka (11), Delhi (8), others (Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Gujarat, Uttarakhand, Punjab, Rajasthan, Tripura, and Uttar Pradesh) (18).

Key Findings

The contours of concerns: Confronted with uncertainty and distancing, the teachers expressed several concerns—personal, professional and pertaining to their students (Table 2, p 17). Concern for safety and well-being of their families was high (90% of urban teachers, 80% of rural teachers). About 50% of teachers were also concerned about the impact of the situation on the economy. Seventy percent of teachers (rural and urban) were concerned that their students would lose touch with their studies/subjects. Urban teachers seemed to be more concerned about responding to the current situation to enable their students to cover backlog of studies, and the burden of additional studies. Almost 30% of urban teachers and 20% of rural teachers were concerned about their job stability (23% were employed in government and 34% in private schools). About 20% of the teachers were concerned that they could not concentrate and work in a planned way in this period.

Contact with students and approaches to continuing education: Fifty percent of urban teachers and 40% of rural teachers reported that they are in touch with their students, primarily via WhatsApp (64% urban, 73% rural) and phone calls (39% urban, 40% rural; 34% male, 44% female; 35% government, 26% private). Based on their assessment of the current situation and knowledge of their students' contexts, teachers made suggestions on possible strategies for continuing education in these times. Urban and rural teachers alike suggested online classes/information communication technology (ICT) enabled learning, reducing the syllabus where possible and a focus on project-based pedagogy. Urban teachers suggested the use of blended learning and a reduced number of classes, perhaps with an odd-even day distribution. They also suggested staggered shifts within online learning. Rural teachers favoured greater use of radio and television/DTH. They suggested the use of phone and social media to support student-teacher interaction.

Teachers' access to device and connectivity: Rural and urban teachers (men and women) alike reported (Table 3) a high degree of access to smartphones (above 90%). However, only about 40%–50% said they have access to laptops, with more women than men having them. Power cuts for longer than four hours were reported by 30% of rural teachers, in comparison to 8% of urban ones. Seventy percent of urban teachers and 51% of rural teachers reported good internet connection. Fifty-four percent to fifty-eight percent of the teachers have access to data of more than 1 GB per day. On the whole, urban teachers were able to spend more time on online activities. Further, access to critical preconditions for conducting online classes, such as power, good internet connection, internet data pack and computing devices like laptops, was limited to a small proportion of the teachers surveyed. While reading

news and watching videos was reported by a reasonably higher percentage of urban and rural teachers (60%–75%), much smaller percentages said they had engaged with online learning courses, or creating online learning content (30%–35%).

Students' context as perceived by teachers: Direct access to school students' context as assessed by students themselves or their caregivers is difficult under the present circumstances. In this survey, we gathered their teachers' perception on this matter, as a reasonably valid proxy. Teachers were asked to assess, on a three-point Likert scale ("most of the students," "some of the students" or "none or hardly any"), their students' access to devices and connectivity.

Overall only about 50% of teachers (more urban than rural) felt that most of their students have access to smartphones

(Table 4, p 18), and about 50% felt that only some of their students have access (more rural than urban). However, daily access to a learning device for two hours was not perceived as being lower, with about 60% of teachers saying that this was possible only for some of their students. About 60% of teachers felt their students have none or hardly any access to a laptop or computer, and 30% felt that some of their students have access to laptops. Sixty percent of the teachers were of the view that most of their students have access to stable electricity. The rural-urban divide was very evident, with only 39% rural teachers reporting that their students have access to smartphones in comparison to 50% of urban teachers saying so. Sixty-four percent of rural teachers said none or hardly any of their students have access to laptops as compared to 56% of urban teachers.

Table 2: Concerns of Teachers

	Total	Urban	Rural
Overall:			
Family's safety and well-being	86	89	79
One's own health	54	57	49
Availability of medicines and essential items	37	34	42
Economic crisis in the country	52	52	52
Professional concerns:			
Students will lose touch with subject	72	73	70
Need for professional development	43	48	34
Backlog of syllabus to be covered	38	41	33
Additional burden for the students struggling with the subject	42	44	37
Inability to concentrate or work according to the plan	20	21	16
Job stability	27	28	22

Table 3: Access to Devices and Internet

	Total	Urban	Rural
Access to smartphone	96	97 (Men-92, Women-100)	94 (Men-94, Women-93)
Access to laptop	46	48 (Men-38, Women-55)	41 (Men-34, Women-56)
Access to stable electricity	93	95	90
Power cuts for longer than 4 hours	15	8	32
Access to good internet connection	64	70	51
Availability of data for more than 1 GB per day	57	58	54
Online presence for more than 2 hours	70	74 (Men-67, Women-79)	63 (Men-69, Women-56)
Online activities:			
Reading news	60	58	66
Watching educational videos	72	75	66
Social media	45	50	34
Online courses	34	41	21
Conducting online classes	46	49	39
Creating resources and content	30	34	21

Table 1: Respondent Profile

	N		Type of School (%)			Gender (%)		Age (in Years) (%)			Highest Education Qualification (%)				
	Total	Teachers	HM	Govt	Pvt	Aided	M	F	51-65	36-50	18-35	>PG	PG	UG	+2
Urban	145	112	33	51	22	27	41	59	24	52	24	9	68	19	4
Rural	67	53	14	61	9	30	52	48	19	55	25	6	61	27	6
	212	165	47	54	18	28	45	55	22	53	25	8	65	22	5

Legend: HM= headmaster/mistress, govt=government, Pvt=private, M= male, F= female, PG= post-graduation, UG= undergraduation.

Also, more private teachers reported better conditions for learning for their students as compared to teachers of aided schools and government teachers.

The need to create an equitable (digital and educational) learning environment for their students in the face of lack of access to devices emerged as a recurrent concern. A government school teacher from Aizawl worried that

almost every student we have in government schools are from poor families which do not even have smartphones even if the teachers are willing to give them online class or “Zoom” classroom. We have very bright students, hungry brains but, unlike those high and middle class kids, they do not have many advantages.

Another teacher from an aided school in Osmanabad observed that the parents of most of his students are from the working class and basic needs related to “food and sustenance are of high concern.” “How can we reach out to students who do not have access to technology?” wondered an aided school principal from Mumbai. A few teachers observed that online teaching can be an option but should not get limited “for a few privileged ... [We need to] check to ensure that no student is left out.” Emerging from these discourses of teachers’ concern is the access to

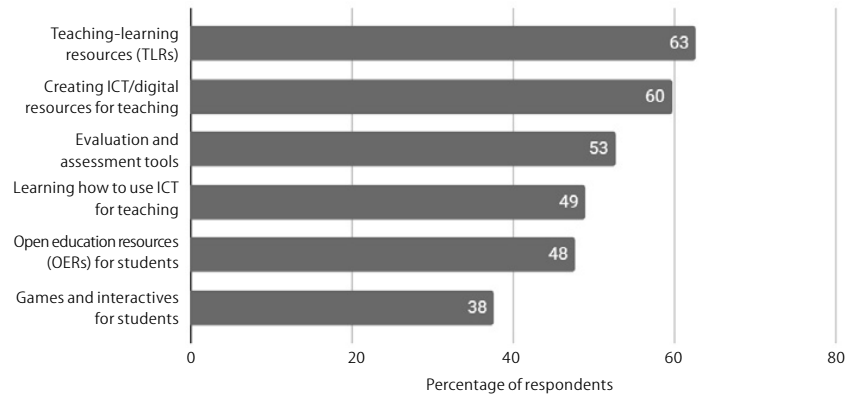
Table 4: Student Access to Devices, Internet (according to Teachers)

	Total (%)	Urban (%)	Rural (%)
Access to smartphone	46	50	39
Most students have	(29G, 53A, 89P)		
Some students have	(63G, 46A, 8P)	45	55
None or hardly any have	6	5	6
Access to laptop	10	12	6
Most students have	(4G, 5A, 34P)		
Some students have	32	32	30
None or hardly any have	58	56	64
	(84G, 41A, 8P)		
Access to stable electricity	59	60	57
Most students have	(58G, 47A, 79P)		
Power cuts for longer than 4–5 hours	17	12	28
Most students have	(25G, 12A, 3P)		
Access to good internet connection	18	19	16
Most students have	(10G, 12A, 55P)		
Some students have	67	71	58
None or hardly any have	15	10	25
Use of device for learning for 2 hr*	27	26	29
Most students have	(8G, 20A, 32P)		
Some students have	65	66	62
None or hardly any have	8	8	9

G—government school, A—government aided school, P—private school.
 * The last item in Table 4 (“use of device for learning for 2 hours”) was added in the third round of the survey and the respondent base for it is 122 teachers. That of all the other items is 212 teachers.

Figure 1: Teaching Support Needed

Teachers and Teacher Educators



technology and devices as the first and significant cornerstone to this system.

Teacher preparedness: Many teachers (urban and rural) assessed their own professional preparedness saying that they are “not technically sound” and “have very little knowledge with regard to digital technology.” They wanted to learn more on “managing classrooms virtually [and] creating content to replace classroom teaching learning interaction.” They shared the concern that there was “no proper and systematic training (thus far).” They felt it is critical since “this (ICT-enabled teaching) is entirely a new concept for teachers as well. So proper training without rush, uniformity in methods, etc,” is sought. Close to 90% of teachers (urban and rural) said that they would be able to spend an average of 10 hours per week on self-study towards professional development. Online video lectures (66% urban teachers, 55% rural teachers) emerged as the most preferred means of professional development.

Availability of suitable resources: The survey revealed that most teachers are open to ICT-enabled teaching. However, in addition to lack of know-how, they also expressed concern over a dearth of suitable teaching–learning materials, or at least their own knowledge of where to find

suitable resources. Teachers across primary, secondary and senior secondary education found it difficult to find resources that are in line with their respective syllabus and medium of teaching. Teaching–learning resources (63%), creating digital resources for teaching (60%) and evaluation and assessment tools (53%) emerged as dominant groups of teacher needs (Figure 1). Teachers also conveyed the need for a “teacher and student friendly platform with sound content to engage teachers and students.” According to a private school teacher from Bilaspur,

in starting the online teaching learning classes we faced some difficulties like teaching without books, syllabus or any resources. It is like fighting in a battle without any weapons.

Support was particularly sought for means of evaluation and assessment.

Challenges during implementation of online classes: The few teachers who succeeded in conducting online classes against multiple odds articulated additional challenges, based on their experience. “Internet connectivity issues, attendance of students, punctuality of students and lack of proper devices for some students” were primary. Disruptions in connectivity, digital and intellectual, pose a challenge in “ensuring that all students are on the same page and are following instructions.” A private school principal from Chennai said, “The attention span is the biggest problem and the credibility of attentiveness is lacking though teachers go with visual representations.” For a private school teacher from Bhopal, “prolonged screen time and high data consumption” is a matter of concern

for teachers and students alike. Indeed, 55% of both urban and rural teachers said that they feared that most of their students would become addicted to digital devices. A primary school teacher from Udaipur shared his difficulty in teaching “through online, especially at primary level,” since they cannot expect children to use phones or PCs for long hours. “Parents were reluctant toward advice given to them on how to help their children in studies and guide them.” While parents’ presence can be a possible solution to this, it is not without its own issues. As one of the teachers mentioned, “they (students) have constant fear of parents judging their performance during the session.” Indeed, the presence of parents as the core support in the current situation remains a shadow issue that requires greater sustained engagement. While their criticality in supporting their ward’s education in the current time is acknowledged as a necessity, the question remains open on how profound the effects will be on account of the differences in their resources (time, knowledge, capacity and skill, and providing devices and data).

The most critical concern for teachers was that their students are “not able to understand the topic.” While the digital divide (such as access limitations) could limit those who can participate in online classes, the question of “how to cater to the needs of students with different learning abilities?” also goes unanswered. There is a need for “resources to manage the diversity of learners” for students who “want to learn at their own pace.” Reflecting on their own predicament, a government school teacher from North Delhi wrote that the challenges in the months ahead include “[lack of] access to devices, connectivity, fear that an alternative is being pushed to be mandatory and the pedagogical-political nature of such an alternative.”

Conclusions

Newspapers have been reporting about teachers who have lost jobs and are taking to various forms of government-supported manual labour. Private school teachers, although they report their students are generally better off in terms of their access to technology, are concerned about

their job stability and effects of the economic downturn. Teachers, aware of the very varied nature of student access to devices for learning, know that e-learning solutions cannot be the answer under the circumstances and hence favour a more hybrid approach—with a mix of split access to physical school and blended learning. As teachers report widely, their own capacity to find and use e-learning resources and the digital medium will need to be developed. Access to smartphones is very high in this group, but without a computer at their disposal, they will remain “consumers” of content, instead of realising digital agency needed to use the medium interactively and to its full potential.

Significant differences emerge between government, aided and private contexts as well as between urban and rural contexts, on matters of basic access to computing, electricity and data—the pre-conditions for any e-learning based solution. Adopting a similar solution across these contexts will undoubtedly have equity effects. Given the varied contexts, workable solutions too will need to be hybrid and localised. The tendency of e-learning solutions adopted by governments has been towards more centralisation, standardisation across contexts and micro-control of teachers. However, as is evident given the varied means of adoption, such an approach is not feasible simply on account of infrastructure inequalities. Whether it is desirable and capable of producing meaningful learning experiences in any scenario is debatable.

Most research on learning outcomes from using e-resources have either shown that there are few gains, or in the gains reported there is also a teacher involved in using them and integrating them into the learning process (OECD 2015). Our own recent study of using e-learning resources in the Connected Learning Initiative, a scalable field intervention, with 478 government schools shows learning gains when they are used by teachers who have received professional development (Chandran et al 2020). E-use in the past has tended to take the form of talking heads or replicating textbook content in digital media. However, several powerful interactive tools to develop concepts and skills are available

today in the open education resource space. There will need to be effort to curate and localise resources in Indian languages, and to popularise awareness of these resources ideally hosting only those resources that make the mark on the Ministry of Education DIKSHA platform. A recent innovative learning experience designed by the “Integrating Technology in Education” team at the Tata Institute of Social Sciences, Mumbai is called “WebQuest” (Charania et al 2020)—groups of students and their teachers signed up and over three sessions spread over three weeks were introduced to ideas by experts, leading them to conduct local investigations, and come back to share and report their findings. Allowing such localised hybrid approaches to emerge, with greater focus on life skills and learning to learn in “authentic contexts” that are afforded in the home and community space, rather than narrow syllabus completion modes, may be a better and meaningful use of the time of students and their teachers.

NOTE

- 1 Link to Hindi Tool: bit.ly/Tchr-HM-TE-Eng, Link to English Tool: bit.ly/Tchr-HM-TE-Eng.

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