

Exploring the Digital Revolution in Education in India during the COVID-19 Pandemic

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Abstract

One important response to COVID-19 was the intensification of the use of digital media to deliver education. However, the results are paradoxical, since the digital revolution did not lead to improvement of the social quality of teachers' working circumstances. We analyze "internal" or subjective oriented constitutional and "external" or objective orientated conditional factors related to teachers that determine the adaptation of digitalization, taking a social quality perspective. Through a case study in the most advanced educational hub of India—Delhi—we find that the digital revolution helped India to address the first-order problems in digital transformation, namely concerning objective infrastructural facilities. The second-order problems, particularly changing the subjective belief structures of teachers related to the integration of technologies, appear to remain a challenge. As India has recently adopted a new education policy (2020), the findings of our study have significant relevance to improving the accessibility and utilization of digital technology in educational spaces.

Keywords: conditional factors, constitutional factors, digital technology, educational space, first-order, second-order, social quality, teachers

In the most recent Human Development Index (UNDP 2022), India was ranked at 132 out of 191 countries assessed. India ranked lowest among BRICS countries, reporting decreases in outcomes on several criteria. A notable change concerned the average number of years that people spend in school, which decreased to 11.9 years, down from 12.2 years (UNDP 2019). This change has been intuitively attributed to COVID-19 and its impact on education. With an advanced digital revolution, India would have made this transition more easily. In the same vein as the decreased educational outcomes, a digital divide affecting low-income groups was observed during the pandemic.

The pandemic tested the capacity of educational systems across the world in terms of their abilities to transition to technology-based learning systems. This transition required not merely possessing digital tools, but also their utilization in the interactive



contexts of educational systems. COVID-19 prompted a trend in the education system called “emergency e-learning,” which refers to a quick transfer to online education (Murphy 2020). Digital learning can be characterized as instructional approaches that include electronic devices and technologies, as well as digital teacher–student contact during the educational process (Dobre 2007). Although virtual teaching was not widely deployed in India before the pandemic, it was the only medium available to fill the learning gap created by the lockdowns (Henderson et al. 2020). The pandemic crisis sparked innovation and growth in the education industry to ensure that pupils’ learning was not disrupted.

In India, since online schooling is not well understood or widespread, the bulk of teachers lacked, for instance, the essential skills to teach and administer tests in an online environment. Yet because there was no alternative, educators began to teach digitally as a result of the nationwide lockdowns. In this endeavor they faced challenges such as the lack of infrastructure, technological skills, digital preparedness, and virtual class management, to name a few. As teachers are the frontline staff of any educational system, it is natural that virtual teaching cannot be introduced effectively without their understanding the obstacles related to developing e-learning, as it is teachers who are confronted with these hurdles. Intrusive changes need to fit well into the social quality of the daily circumstances of those concerned. Therefore, the basic assumption of this article is that adequate utilization of digital technologies in education requires taking into account the factors that play a role in enhancing the social quality of the daily (working) circumstances of the teachers. These factors—according to social quality theory (SQT)—concern the constitutional (subjective oriented) and the conditional (objective oriented) factors (Van der Maesen and Walker 2012). Interactive processes between these factors need to be studied to understand how the social quality of working circumstances can be sustained, and thus the changes successfully introduced. This interactivity of processes between the self-realization of people and their societal environment result into “the social”; with regard to the subject of this article this concerns the adoption and utilization of technologies by the users. As teachers are the nodal points in the transition to technology-mediated education spaces, we examine constitutional and conditional factors related to the teachers. Their position in the school setting logically becomes a conditional factor for the social quality of the learning circumstances of students.

The approach of this article is exploratory. Our research question concerns the relative ignorance about the impeding and facilitating factors affecting the introduction of technologies in educational settings. We seek to identify the workings of constitutional and conditional factors in order to understand processes leading to the social quality of teachers’ working circumstances in virtual classrooms. We also examine institutional responses to delivering support and dealing with apparent shortcomings. We consider what lessons can be learned to strengthen in particular the relevant constitutional factors, that is, personal capacities to use technology, responsiveness in virtual classrooms, and mechanisms to build resilience in technology transition.

The article is organized as follows. Firstly, we present a historical picture of the digital revolution in India. Then, we identify the empirical research methodology. We then describe the analytical framework, derived from SQT, that is used to identify the interactive processes between constitutional and conditional factors relevant for enhancing social quality in the virtual classroom. The choice of our study area of Delhi state and the selection of interviewed teachers are explained. Following this, the findings of our empirical research are presented in three sections. Firstly, we provide a description of “internal” constitutional factors that are shown to be at stake. Secondly, we provide an account of “external” formal and informal conditional factors. Government interventions are conceived as conditional factors that support and influence the working circumstances of teachers. Thirdly, we identify the differences in the achieved social quality for teachers in different types of schools (government and private) in our study area. Fourthly, our conclusions and considerations related to our findings are presented.

Summary of the Digital Revolution in India

Digital technologies have emerged as a transformative tool for governance and development as a specific component of the information technology (IT) revolution in the 1990s. A shift in the sociopolitical and socioeconomic landscape toward neoliberalism allowed the IT sector to boom, making India the outsourcing hub for software and hardware work. This allowed multinational IT companies to proliferate as they set up bases in India while catering to clients in the United States of America and elsewhere. This made IT engineering one of the most sought-after professions in the country. Computerization, privatization of telecommunications in the late 1990s, and the proliferation of the internet led to the adoption of technology across all industries.

The global COVID-19 pandemic of 2020 advanced the adoption of digital devices by five years in merely two months. Mobile technology has deeply penetrated in India, resulting in 1.18 billion mobile connections in the country as of 2021. At about 60 percent, internet use is higher than the global average. In terms of the absolute number of smartphone users, India is next after China, with 493 million users (as of 2021). However, this refers to about 40 percent of the population (compared to China, at 70 percent). Indian mobile users consume 12 gigabytes of data on average per month, which is one of the highest rates in the world. As a result, data costs are among the lowest. The Prime Minister of India has launched a mission to expedite “digital penetration” and make the next decade a “techade.”

The advantages of technological development, however, are not equally distributed among the population. Despite the progress made, the gender gap in ownership and use of digital technologies is a serious concern all over South Asia. “Indian women are 15 percent less likely to own a mobile phone, and 33 percent less likely to use mobile internet services than men” (Nikore and Uppadhyay 2021). The gap is much wider

in other South Asian countries, such as Bangladesh (where women are 24 percent less likely to own a mobile phone and 41 percent less likely to use mobile internet services) and Pakistan (34 percent and 43 percent respectively). A comparable digital divide is visible concerning urban–rural inequalities. In rural areas there is only 26 percent penetration, compared to the national average of 51 percent. These obvious inequalities refer to normative criteria, as elaborated in SQT. What has been less explored are the factors, “internal” and “external” to the educational space, that are in play in causing these inequalities.

The quick move to e-learning in the pandemic has accentuated the longer-standing challenges of inequality and divides in the availability and utilization of digital media. Generally speaking, schoolteachers and students lacked the necessary tools, infrastructure, capacities, and support to fully participate. Teachers were not given the digital tools they needed to properly perform remote digital teaching (mobile phones, laptops, reliable internet connectivity, etc.). Nor were they given adequate supportive instructions on how to deal with the enormous material on e-learning portals. Furthermore, advice on how to reach all students was almost completely lacking. Teachers struggled on their own to reach their students, especially those in remote locations or at risk of being left out, due to a lack of capacities and access to technologies (UNICEF 2022). Various studies conducted on technologization in school settings corroborate our findings. Nikore and Upadhyay (2021) reported that during the pandemic, when digital devices were purchased, they were in particular purchased for boys and not girls, despite income constraints. Apparently, the digital divide, which expresses the social quality of daily circumstances, was reproduced during the pandemic.

Analytical Framework and Research Methodology

Social Quality Analytical Framework

In order to structure both our empirical methodology and the interpretation of the data, we deployed the “social quality analytical framework” (or architecture) (IASQ 2019). In an earlier study on the societal impact of COVID-19 in India (Pellissery et al. 2021), by deploying this framework it was shown that the segmentation of the healthcare systems unequally affected the Indian population. Interactions between constitutional (personal/subjective), conditional (societal/objective), and normative (ethical) factors in societal processes lead to specific degrees of social quality in the circumstances of daily life. These three kinds of factors are immanently and dialectically interrelated (IASQ 2019). Elaborating our research question (“to what extent was digital media adequately introduced in the educational context?”), we focus on the social quality of the daily circumstances of teachers in their workplace. Our approaches are thus based on the core notion of “social quality.” This is defined as: “The extent to which people are able to participate in soci(et)al relationships under condi-

tions which enhance their well-being, capacity and individual potential” (Van der Maesen and Walker 2012: 68). Our empirical investigation addresses the “internal” constitutional and “external” conditional factors that function in enhancing the social quality in the daily circumstances of teachers, for instance resilience, responsiveness, personal capacity, and social empowerment. The outcomes in terms of social quality may be assessed normatively through the normative criteria of SQT (IASQ 2019). The focus of our study in particular is on factors directly in operation in the “educational space,” in particular factors expressed by the personal experiences and characteristics of the teachers. We have chosen this focus because our a priori point of view is that the transition to technology-led education primarily depends on personal characteristics, such as personal capacities, resilience, responsiveness, and social empowerment. We will refer to these teacher-oriented factors as “second-order” factors or challenges. The social quality of the teachers’ working circumstances, of course, concerns the well-being and productivity of these individuals. And needless to say, the impacts of the social quality of this personal sphere go much further. After all, teachers are determining and crucial conditional factors in relation to the social quality of the learning circumstances of students and the educational system as a whole.

Sources of Data

We used two distinct sources to collect the data. Firstly, we reviewed various sources for secondary data collection, namely national assessments on three relevant quality parameters, to identify the study area for our investigation: (a) degrees of digital penetration in terms of number of people using the internet (NFHS 2019); (b) kinds of educational governance among different states of India (NITI Aayog 2020); (c) levels of investment in teacher training (state budgets). For the parameters (a) and (c), Delhi state is top among the states of India. For parameter (b), Delhi stands in third position. This quality assessment enabled us to choose the “best case” for transposing the results of our study to the country, namely the digital educational hub of Delhi. Our findings, therefore, are not to be generalized across the country. Rather, we follow the logic of extreme case selection: the findings of the best case will enable us to conclude that the results of digitalization, in terms of social quality, in other states and areas will be of much lower quality (Bennett and Elman 2006).

The second source concerned primary data collection for our study. Interviews were held with various stakeholders in educational settings in Delhi. Among others, we carried out thirty in-depth interviews with teachers from public and private schools in Delhi in the first quarter of 2022. The teachers were selected deliberately to get the desired variety of teachers of different subjects and distribution in geography, age, and gender. The in-depth interviews were administered using a schedule organizing various aspects of working with virtual classrooms, training facilities, and other supportive actions they received, as well as their experiences with the process of transitioning to virtual classrooms. To put the views of teachers in a wider perspective,

we also interviewed digital coaches, as well as end users of virtual classrooms, namely parents and students. Triangulation of information gathered from different sources was deployed to analyze the factors and challenges in the digital transition. During the process of triangulation, we examined signs that contradicted or corroborated the experiences provided by the interviewed stakeholders.

First- and Second-Order Challenges

We will make a significant distinction between two kinds of challenges in digital transformation, namely “first- and second-order challenges.” According to educational transformation models, the integration of changes in classrooms will be successful if involved teachers have proper equipment and training (Fisher et al. 1996). While this may have been relevant for earlier transformations, digital technology is more difficult to integrate into teachers’ regular routines, often necessitating changes across numerous aspects of educational practice. A very important aspect is that the more one’s usage of technology is integrated, the more profound and demanding the required shift becomes (Sandholtz et al. 1997). Even though most teachers now realize the value of deploying technologies in the classroom (Roblyer 1993), many obstacles may hinder their adoption of digital media. Dianna Brickner (1995) identified and defined the concept of first- and second-order obstacles (Cuban 1993) and categorized these as “first-order and second-order barriers to change.” The “technical” availability of and access to digital tools and infrastructure are what we will refer to as the “first-order” challenges of technology. First-order barriers to technology integration are regarded as objective and extrinsic to teachers, and include inaccessibility of computers and software, inadequate time to design lessons, and insufficient administrative and technical assistance. “Second-order” challenges concern the more human, intrinsic factors determining the behaviors of those involved in processes of change. We operationalize these as constitutional (personal) and conditional (circumstantial) factors affecting the social quality of teachers’ circumstances in their workplace. Responses to first-order challenges modify existing practices in small steps to make them more effective or efficient, while maintaining basic attitudes (e.g., utilizing a computer instead of a worksheet for basic skills assessment). Second-order modifications, on the contrary, concern more internal, human elements, for instance particular beliefs on how things should be done, personal capacities to change, responsiveness to ideas, and learning from outside. Second-order hurdles are inherent to educators and include ideas about teaching, views about technology, established teaching methods, and a refusal to adapt (Ertmer 1999). Second-order barriers are less visible than first-order barriers, as they are more personal and deeply rooted. Thus, first-order barriers may be tackled relatively easily by providing access to the required hardware and software. Tackling second-order barriers may imply a real personal threat, because it challenges and may even clash with particular belief systems. Early initiatives of digitalization concentrated on removing first-order barriers, because they are easily measurable and solutions are fairly easy to implement (if resources are allocated).

Teachers who feel compelled to overcome first-order obstacles may become frustrated with having to deal with these at the same time as having to wrestle with second-order ones. According to researchers for Apple Classrooms of Tomorrow (Sandholtz et al. 1997), elimination of first-order hurdles allows second-order barriers or concerns to appear. Ritchie and Wiburg (1994: 143-153) note that “traditional perceptions of what teaching, learning, and knowledge should look like are major limiting factors to integrating technology.” Thus, even if first-order barriers are completely erased, there is no guarantee that educators will adopt new digital technologies.

In the following, the findings of our research are presented. We will start with “internal” (constitutional) factors directly related to aspects of the educational space that appear to play roles in the degree of social quality of working circumstances—respectively, the success or failure of teachers to adopt digitalization. Thereafter, we present “external” factors to the degree of social quality, in particular aspects of social empowerment that facilitate the assimilation of digital devices by teachers.

Aspects and Factors of Educational Space

Complexity of Adopting Technologies

There were no ready-made resources available for teachers when the lockdown during the COVID-19 pandemic took everyone by surprise. It was a crisis situation for all those involved. Thus, teachers were forced to look after themselves and became independent in curating their own resource lists. It was much later that virtual training and resource portals were developed. The development of these portals came when teachers had already learned how to function in virtual classrooms by learning from their mistakes. This preparedness goes well beyond learning how to use digital tools, like chat boxes, breakout rooms, and ways of publishing finished tasks. Against the backdrop of a lack of prior technology training, teachers faced a difficult transition.

Regarding the lack of prior training, a government school teacher narrated her experience: “I had no clue about Google Classroom, Google Forms, etc. No such training in this regard was provided before the pandemic. One session was organized every two years. Those were just mandatory sessions that everyone would attend, but they hardly taught us anything there except for things like recording attendance virtually and so on.”

A teacher from a private school recounted a similar experience during an interview: “There were sessions organized once a year regarding using tools of MS office, but nothing related to writing emails, using Gmail, operating Google Classroom or Google Forms. Hence, the virtual transition was indeed challenging with no prior knowledge of these tools.”

These responses indicate the complexity of adopting digital technologies. A wide variety of attitudes, beliefs, and skills are at stake when introducing new technical

media, and various skills are required to carry out digital classroom interactions. Different experiences expose another type of misplaced belief about technology in educational contexts: teachers often aimed to reproduce physical classrooms using virtual mediums. Neither the educational content nor the examination patterns changed to fit the technological medium. This misplaced belief became a barrier to appropriate teaching.

The relationship between digitalization and teachers' beliefs is bidirectional. On the one hand, "technology-rich learning experiences" have the potential to shift teachers' perspectives from teacher-centered to student-centered. Teachers who already hold such beliefs, on the other hand, are more inclined to use technology for student-centered instruction. However, in both circumstances, the relationship is hampered by perceived limitations or beliefs, and ongoing professional development is required for it to progress (Chand et al. 2020). Below, we present our findings on several "internal" characteristics that play a role in the (barriers to) adopting digital technologies in educational spaces.

Teachers' Age

There have been various studies conducted in which it has been observed that IT integration in language teaching and learning is influenced, among other factors, by the age of the teachers and their teaching experience (Egbert et al. 2002; Teo 2008). Interpersonal differences and how they affect welfare have long been debated in capability literature (Sen 1980). It would be interesting to further elaborate the relationship between SQT and the literature discussing the "capability framework." Analyzing the documents in the public domain, and based on interviews with government officials, it was found that the Delhi government failed to acknowledge any differentiations in age. There is no mention of the important aspect of how older teachers were coping with these technological challenges.

When a government official from Delhi Education Department was asked, she replied, "We didn't come up with any special training workshops for older teachers."

Reliving their own experience, an older teacher in a government school said, "It was a nightmare. Teaching had never been this difficult. It took me days to understand a simple thing such as sending emails. I would forget if I did not practice regularly. The administration should have provided us with helpers who would have guided us in class, as that would have boosted my confidence."

An older teacher in a private school had a similar experience, and she said: "Students would guide me with basic things such as screen sharing, but at various times, they would also pull pranks on me, as I was literally at their mercy. So, it was a very difficult time as I had to be very conscious of every step."

Meanwhile, younger teachers did not face as many challenges, as they were able to quickly grasp new tools and software. Age very much matters in attitudes to and capabilities of adopting new technologies in the classroom setting. The as-

sumption that teachers constitute a homogenous group hampers the success of any IT training program.

Subject Specificity

Two types of variation were reported by our respondents: firstly, challenges of subject-specific technology adaptation, and secondly, dealing with different class levels or age groups of students. We noticed huge variation among teachers who dealt with different subjects in terms of their resilience to the crisis. Teachers of language subjects faced different challenges compared to those teaching subjects such as science and mathematics.

A private school Hindi teacher recounting those initial days said:

I had to double [my] efforts because my devices were not compatible with the required script; as a result I had to invest in a separate device. Moreover, there was duplication of efforts while making elaborate notes (which were to be shared with students according to guidelines) and teaching in class. It was much later that I used the speech-to-text and I was able to speed up notes preparation.

A government school mathematics teacher mentioned that “Teaching maths without a board is an impossible task. Hence, it was much later that [a] whiteboard in Zoom was introduced and I was able to annotate the concepts over there. Before that, I would try to make slides to explain concepts.”

One of the teachers we interviewed accurately noted the following: “I teach chemistry to secondary classes. Without lab experiments, students don’t understand the practical realities of knowledge imparted via books. Hence, I took it upon myself to find videos of these experiments online and would share them with my students. This gave students an idea as to how real-life lab experiments would be conducted.”

Another teacher, who teaches history, said: “During virtual lectures, it became all the more important to make learning interesting. So, I made sure to share documentaries and movies with my students. We used to have discussions as well. This ensured learning beyond the textbook and discussions ensured that students would participate and engage with their classmates. So, I tried my best to ensure that it wasn’t just a boring history period.”

Class-Level Specificity

The different levels of classes posed different challenges, as primary-class students required more assistance compared to senior students. It was very important for primary-class teachers to ensure that students learned and remembered what was being taught, as these were supposed to be their foundation years. Thus, primary school teachers felt more responsible for their students. Young learners also often lose their

focus and get distracted easily. Teachers teaching senior classes were largely stressed about completing the syllabus. Even with less engagement, they were more focused on completing lectures and the curriculum assigned.

A primary government school teacher said: “It was very important to engage students in class. [For instance] having interaction sessions or taking breaks and talking to students in between classes helped them in focusing on studying.” A primary private school teacher shared her experience: “I would ensure to give students some physical tasks. So they would have to move around and thus take interest in what was being taught. The physical tasks would also help them engage with the learnings that were being imparted.”

For primary classes, assessments were easy to change according to the situation; however, for senior classes, assessments were conducted online, where there were instances of students copying answers from the internet.

A student studying at an elite private school candidly shared her experience of virtual exams. She mentioned that “We used to be given sufficient time to complete our exams. We would exchange answers over WhatsApp and search the internet for something we did not understand.” A private school teacher teaching secondary classes said, “Every student was getting high marks. It becomes very difficult to understand if students have learned something!”

The experiences of a pre-primary private school teacher were quite different, and she said, “The struggle was to make students sit [in] one place, virtually! Younger kids are much more difficult to handle and managing via screen was a disaster as they would often not listen, to their parents also at times. Hence, my job was equally tiring because of the virtual environment.”

These findings strongly suggest that—both in interactional and in technical senses—specific methods need to be deployed to achieve good results in the integration of digital technologies in educational spaces. Specific subjects as well as different class levels demand specific approaches, which so far have not sufficiently been elaborated and implemented when digitalizing the school system in India.

Students’ Behavioral Patterns

Maintaining the behavior of a virtual class was an added struggle, as managing student attendance and engagement was very challenging. Teachers had to continually determine how to teach topics in the right manner while taking into account student absenteeism.

On managing classrooms virtually, a government school teacher said: “More than 50 percent of the class used to be absent. We were conducting classes till late evening in the hope that students who didn’t attend morning classes would attend in the evening. Moreover, many students didn’t have enough devices so we would call up their neighbors and request them to allow students to attend classes from their phones.” The extra miles that teachers went are clear in this statement.

However, a private school teacher said that

Attendance was not an issue, it was lack of engagement. Students would log in and not respond. It would be very hard to understand if they [were] with me or not as I wasn't able to see their faces. Whereas there were also instances where some students made fun of some other students' appearance, due to which they stopped attending classes. So, I had to continually motivate that child to continue classes. So, virtual class management posed different challenges.

On a similar issue, an elite private school teacher mentioned that "It was over-involvement of parents that would often disrupt classes. Parents would sit next to their children and prompt them to answer or scold them for not knowing the answers. So, we would request them to let the child learn at their own pace. So it wasn't just managing the students, but also their parents!"

A parent of a student attending private school corroborated this: "Teachers did their best. I sat beside my son and made him attend a few classes. He would not sit in one place. It was double work for me, managing my work from home and his learning from home."

This evidence demonstrates how demands are put on the personal capacities of teachers depending on the behavioral characteristics of the student groups they deal with. Differentiation is also needed between groups of students to understand and deal with the barriers that teachers face when engaging in processes of technology adoption.

Social Empowerment by Supportive Systems

Support by the School Administration

For school administrators, the global crisis has presented an unprecedented challenge. Principals and headteachers may be accustomed to dealing with minor crises. The COVID-19 pandemic, however, exposed serious flaws in the supportive actions of educational institutions and in administrator readiness for crisis leadership. During any crisis school leaders must communicate effectively, facilitate processes of understanding in unclear situations, be open and flexible, and pay attention to employees' emotional well-being and health. Teachers in government and nongovernment schools mentioned that they were connected with their respective school leaders via WhatsApp groups.

A government school teacher said that "Our Principal ma'am was connected with us throughout. She would take updates from us daily. We would also have regular calls where teachers were given the freedom to come forward and share their concerns. The support provided by our Principal ma'am indeed gave us the confidence to continue teaching online."

Another private school teacher responded, “Our headmaster was very supportive during virtual classes. He would ensure that we didn’t face any challenges and thus would ask for feedback on training sessions. This way we were able to get the required help from the IT department of our school.”

These WhatsApp groups with school leaders worked as trust groups that provided teachers with a safe space where they could share their experiences and concerns. The support provided by school leaders instilled confidence in the teachers. These groups worked as support systems and ensured that teachers’ well-being was not at the cost of larger goals of learning and completing the syllabus. The constant connection with school leaders motivated them to pursue virtual teaching while overcoming obstacles, as they felt they were an important part of the system.

Support through Informal Settings

Informal channels and networks allow teachers to voluntarily engage in shared learning, reflect on their teaching practice, and receive emotional support (Macià and Gracia 2016). As teachers managed these turbulent times they were also dependent on informal channels for immediate support and help. Families, peer groups, and the internet appeared to be largely responsive to assisting teachers in these difficult times.

An obvious comfort zone for teachers were the younger generations, who, being adept at using digital media, assisted their parents in developing the necessary capacities.

A government school teacher said, “I would take help from my children. They helped me understand how to make videos, how Google forms are made, and even how to operate ... Zoom. Without their assistance, I don’t think I would have been able to operate anything. Also, going back and asking them repeatedly was comparatively easy and more beneficial than any other kind of training provided.”

Informal communities shaped by social media can respond to the individual and collective requirements of instructors, allowing them to construct learning processes responding to societal changes in an open and collaborative environment (Lieberman 2000; Lieberman and Mace 2010).

A government school teacher mentioned that “A colleague started a YouTube channel where he would post content related to seamless online teaching. His tips and advice were very helpful and gave me ideas as to how to teach and engage with [the] class virtually.”

Another private school teacher said, “We would share our experiences with our friends, share videos and articles of use to everyone. This peer learning group made me realize that we were in this together and helped to keep stress away.”

Teachers benefit from the opportunity to share their experiences by reflecting with others on what they do in their daily routines and through other teachers’ contributions or queries. Writing about their experience also has an impact on the production of new insights. These reflective sessions apparently have great value for the social

empowerment of teachers during processes of adopting digitalization and on social quality in the workplace. These spaces that are socially empowering for teachers should be viewed as significant conditional factors for integrating digitalization into educational spaces.

Support from the Government

Government intervention to facilitate the use of digital media in teaching constitutes an important conditional factor for the required capabilities of teachers. With limited support from the administration and the state, the teachers were facing challenges on their own without a healthy balance between personal and professional life. Both in their private lives and their professional experiences and performances, they suffered from the lack of support.

A teacher from a government school reported: “Initially teaching online was a hassle as we were ourselves dealing with COVID-19 at our respective places, but we were also responsible for getting students to class. There was no personal and professional balance for us, as we were left hanging in the middle of nowhere with no support, but just guidelines to follow.”

Another teacher from a private school, recalling her experience, mentioned that “Initially we thought that everything [would] become normal in two weeks, hence there was no stress about completing coursework; however, when the situation worsened, we were given strict instructions to send notes and upload videos for students. The deadline to share these deliverables was very tight and there was no support provided.”

One of the participants said, “Apart from the WhatsApp group with the Principal there was absolutely nothing done for our peace of mind. It seemed as if everyone forgot that teachers and their family members can also come down with the virus. It was all about students’ learning loss, completely sidelining the teachers!”

These experiences indicate two explanations for teachers’ stress and anxiety. The first was a purely personal fear of catching COVID-19 or having a family member contract it. The second source of concern was their inability to balance their personal and family obligations with working full-time and learning new teaching methods. Already before the pandemic, the main source of participants’ dissatisfaction and stress was a lack of support from the school administration in dealing with issues like meeting all of their children’s educational needs, changing curricula, and personal life balance. The pandemic situation expanded the need for support to a completely new set of issues. However, what teachers felt toward school administration or the state regarding additional psychological support more or less remained the same.

It is in this context that we need to review some measures that the government took to provide more general support in processes of change. At national level, a new program of psychological support was inaugurated (called Manodarpan, literally meaning “mirror of mind”) in July 2021. The program aimed to provide psychological

help and counseling to children, teachers, and families for mental health and emotional well-being. Under this initiative, a national toll-free helpline was established to give tele-counseling to students in schools, colleges, and universities, as well as their parents and teachers, in order to address mental health and psychosocial difficulties. Under the Manodarpan program, a series of webinars and discussion sessions were held to reach out to students and all stakeholders in the education sector with the goal of raising awareness about mental well-being challenges. It offered a forum for anyone seeking psychosocial support from mental health professionals, such as counselors, psychologists, and educators. Additionally, live interactions were conducted using an e-learning channel. As per Manodarpan's guidelines, health, particularly mental health, yoga, and physical education should be required components in all teacher-education programs. Advocacy is required at several levels of the education and health systems, including "primary, secondary, and tertiary care," for effective implementation of this subject. The idea was that the above resources would be mobilized through the Manodarpan initiative, enabling a long-term psychosocial support system for students and teachers that would be useful even after the pandemic, with preventative health, mental health, and wellness incorporated into the normal course of learning.

It is interesting to note that there was no mention of the Manodarpan initiative by government school teachers. This points toward the efficacy of such initiatives.

When participants from government schools were asked about measures that were present for their mental well-being, one replied, "We were made to sit through some more webinars that honestly made no sense. For some teachers, their families were suffering both directly and indirectly because of the pandemic. These sessions didn't solve anything. It was just a mandate that they had to complete. Moreover, we had no access to counselors or therapists."

Meanwhile, elite private school teachers had a slightly different experience; one said that "Contact numbers of therapists were shared with teachers; they were available for sessions twice a week. Many of my colleagues took these sessions and felt better with managing things."

It is also interesting to note that there is no report on the impact or implementation of Manodarpan as an initiative. With mental health gaining prominence over time, a report on such an initiative would be helpful for learning and implementing changes based on stakeholders' responses for a robust and effective initiative on mental well-being.

One of the participants said, "I don't think my fear of technology has gone away. This was just a response to lockdown and I still don't feel very comfortable with these innovations."

Private elite school teachers, who were given a massive number of sessions, had a similar response, with one saying: "Virtual classrooms were a different experience. We can include a session once a week, however nothing more than that, as teaching in person is way better than using digital tools."

In conclusion, the psychological and societal support provided through the Manodarpan program could not solve the intimidation felt due to the introduction of technology. Initially, with the transition to online teaching, this intimidation seems reasonable. However, it seems to be continuing even today. When asked if teachers would prefer to use digital tools in the future, the majority of participants answered negatively. Intimidation by technology thus emerged as a common theme among participants that remained consistent throughout the virtual teaching phase.

Differences between Public and Private Schools

The Indian Schooling System

Literature on the Indian education system has repeatedly shown huge variations in quality, primarily determined by the class question in Indian society. The National Sample Survey Office's indicators of Household Consumer Expenditure have showed huge differences between rural and urban households in educational expenditure. In 2011–2012, the average monthly expenditure on education for those in the 50th–60th percentile of income distribution (the “middle class”) in rural India was INR 31.47. For those in the same percentile in urban India, the figure was INR 125.49. Monthly spending on education for the top 5 percent of urban Indians was INR 908.12. The bottom 5 percent of rural Indians spent INR 7.54 for education. These differences are logically reflected in the quality of education. This socio-economic segmentation in education is very similar to what Pellissery et al. (2021) showed in the healthcare system. Both in the public and private sectors there are different types of schools to meet the demands of class segmentation in Indian society. In public schools, the elite section goes to what is called *Kendriya Vidyalaya* (school for central government officials). In the same public realm, there are schools used by poor citizens. The quality of these schools, where much teacher absenteeism and other shortcomings are reported, is much lower. In the private sector there are elite schools with international branding whose high fees keep the middle class from entering. Since government public schools for the poor are insufficiently functional, parents aspire to send their children to low-fee private schools. Sandwiched between the public and private systems, government-aided schools managed by religious and charity organizations have been developed.

Government Schools

The biggest challenge to transitioning to the use of digital media was naturally in government schools. Teachers and students here faced serious problems of the first order (a lack of infrastructure and internet connection). In some regions of India,

approaches were adopted to televise classes. Classes given by a few trained teachers were recorded and broadcasted via television channels in given time slots. These teachers had very limited interaction with the students.

In Delhi, we noticed some public schools attempting to establish digital classrooms, with huge difficulty. It is not enough to have the most basic internet connectivity through mobile networks. The quality of the internet infrastructure is just as crucial as the connectivity itself. Many e-learning tools, as well as streaming services and video calls, are not compatible with low bandwidth. Moreover, establishing a solid, extensive power infrastructure that offers reliable, inexpensive, and uninterrupted electricity is a key prerequisite that was clearly missing.

One of the teachers from a public school whom we interviewed said that

My children were also studying from home. Having separate mobile devices helped, however, internet connection posed a big challenge. Because the usage was high and I was busy taking classes late evening I had to get the internet connection upgraded twice. This was definitely an added expense for which no support was provided by the government. Being the sole breadwinner, upgrading the internet became a considerable expense.

All the government school teachers we interviewed reported the training programs they attended. However, the quality of these training programs was inadequate. Further, there were huge inconsistencies between the narratives of trainers and government officials on the one side and participants in training programs on the other.

A participant teaching at a government school said:

There were two sessions conducted and they were not at all helpful. The facilitator was very fast and I didn't get the time to understand or make notes. Moreover, the number of participants in the training session was quite high. There were two hundred participants so it was very difficult to ask questions. The sessions covered very basic functions of the software and didn't go in depth. Hence, those sessions were not useful at all; more sessions were required.

However, according to the government officials, a “maximum of fifty participants [could] take part in these training sessions.”

What clearly comes through from these perspectives is that government support programs address a huge variety of teachers without taking into account significant differences in needs and demands. Therefore, they largely miss their target. The outcome is that teachers working in government schools are not empowered to develop the required beliefs, attitudes, capabilities, and resilience to integrate digital technologies into their teaching.

Private Schools

In private schools, the narrative was slightly different, as teachers were largely dependent on the school administration for any kind of training. These training sessions

varied from school to school since there were no clear guidelines that the schools had to follow. Training sessions in private schools were more numerous than in government schools. The frequency of these sessions ranged from two to six per year. The sessions covered basic tasks such as sending and drafting emails, managing Google classrooms, uploading notes or videos, and operating platforms such as Zoom, Microsoft Teams, and Webex.

One of the respondents reported, “Even though things were rough and uncertain, the sessions provided by the school were helpful as they set the context for the next months. These sessions gave us a primer in virtual teaching. However, they were not very helpful and I had to turn to my children and husband for help from time to time.”

Another respondent said, “The sessions were not entirely helpful as they were not personalized and I was not able to practice with the facilitator. So, I had to practice later; as a result I forgot many things and had to contact the facilitator later.”

Teachers’ experiences in private schools are much more reassuring than those in government schools. A higher frequency of sessions and adequate pacing of the sessions were reported. However, sufficiently personalized delivery was missing.

Elite Private Schools

Elite private schools, which had the required resources, operated in a different manner, prioritizing teacher-training. Respondents teaching at elite private schools said that they were given a minimum of ten online training sessions in the first two months of lockdown.

One respondent said: “I am completely satisfied with the training sessions provided by the school administration. They helped us gain confidence and navigate these testing times through constant support.”

Another respondent mentioned that the IT team was always available to help them in case of any issues; “this was a huge sigh of relief,” they said. In some schools full-time IT officers were available to troubleshoot and to make phone calls to parents and teachers to enable participation in virtual classrooms. Many “mandatory” requirements specified by the government were waived by the school administration for these teachers.

One parent of a child in an elite school said: “In some way[s], [the] schooling experience during the pandemic was a better experience. I could see what was going on in the class. I have heard of other parents who had bad experiences. At the end of the day, I felt it was worth paying such a huge fee to this school.”

It is obvious that the quality of the support services for digitalization delivered at elite private schools is of a much higher standard compared to poorer schools. “I am getting what I am paying for,” as in many other societal spheres, is the basic motive here. This neoliberal principle is antithetical to the normative principles of the social quality perspective. It is indeed antithetical to social justice, solidarity, equality, and

human dignity. “Quality” here, in the realm of educational space, is reduced to the individual’s ability to purchase it as a transactional event.

Conclusion

This article has examined the facilitating and inhibiting factors operational in the transition to digital classrooms during the COVID-19 pandemic. In the context of virtual classrooms as they unfolded due to COVID-19, the perspectives of teachers, school administrators, government officials, and parents were captured regarding the transition to technology-mediated education. In our approach, based on SQT, we have examined constitutional and conditional factors determining the social quality of the daily working circumstances of teachers, using Delhi state as a case study. Distinguishing between first- and second-order barriers, we have identified quite serious second-order problems related to the teachers. These barriers constitute important shortcomings in the successful implementation of the digitalization of the educational system in India. The key challenge appears to be changing the beliefs and related attitudes and behaviors of teachers about the suitability and applicability of digital media to their educational tasks.

We notice that even in contexts where the first-order problems were effectively dealt with (such as in Delhi), the second-order problems appeared to remain fundamental (Sabarwal et al. 2022). While some expected that the pandemic would in a revolutionary way enhance digitalization in the classroom, this has not happened. After more than a year of virtual teaching, many teachers remained relatively ignorant of how to incorporate technology into their classrooms. Among various factors and circumstances playing different roles, deeply established beliefs and attitudes related to the use of digital technology appeared to be important. The need to involve these deeper (constitutional) layers in the processes of adaptation makes thorough changes quite difficult to achieve. Various support systems evolved and were launched to facilitate the transition from the “physical classroom” to the “virtual classroom.” However, teachers are still not content with the adequacy of training and thus lack the self-belief required to deliver the classes effectively. Significant support was experienced from informal and formal dialogical settings in which reflection and learning were stimulated. However, formal government programs addressing digitalization in educational space were not perceived as successful. The success of supportive programs in (elite) private schools, where obviously quality was achieved by payment, was judged ethically not consistent with the moral principles of social quality thinking.

Our conclusion is that the (easy) assumption that the introduction of technological facilities automatically brings about a higher degree of social quality in the daily working circumstances of teachers needs to be challenged. In particular, constitutional personal factors play important roles in processes of digitalization and intersubjective variations in capacities to integrate digital technology. Although technology is not

the elixir for all educational problems, it may very well help teachers to connect with students regarding particular aspects, both in subject-specific and holistic learning. The deployment of adequate, personally oriented support systems, as conditional factors addressing the constitutional factors of the teachers, could play an important role in the development of our technology-mediated education system. The successfully achieved social quality of teachers' working circumstances will ultimately imply great benefits for the social quality of students' daily learning circumstances.

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