Educational Technology in School Education in India

Executive Summary

India is now the second-largest market for e-learning in the world; the sector's future evaluation is pegged at USD 30 billion which is more than double that of India's education budget. This has grown during the pandemic with a 30% increase in the time spent on education apps on smartphones reported since the lockdown. India is in the process of overhauling some of the legislative and policy frameworks related to the EdTech sector making a call to strengthen regulatory oversight timely. This Brief highlights some of the challenges and makes recommendations to address educational inequality pertaining to technology access and use, enhance child safeguarding, ensure consumer protection and address the commercialization of education. The average price of an EdTech product on the Indian market is equivalent to 77.5% of the annual per capita income for its lowest wealth quintile; only 18% of poor and lower-middle-class users are happy with the services offered by EdTech companies compared to 31% of the middle and high-income households. India has been identified as the second most cyberattacks affected country in the world yet its data privacy rules do not provide specific provisions for the protection of children's data by EdTech companies. India needs to invest more in providing digital access through schools instead of attempting to do so at the individual household level. Yet only 22.28% of schools in India have internet facilities. 84% of teachers struggled to deliver education through digital modes at the start of the pandemic and by the second year, 60% of them reported feeling inadequately trained to maintain hybrid teaching. Stronger redress mechanisms for parents to address profiteering by EdTech companies are overdue given the spike in parental complaints. A more critical view of the use of technology that recognizes both its strengths and weaknesses would be essential.

The Growth of the EdTech sector in India

The COVID 19 pandemic saw rapid growth in the education technology (or EdTech) market. India is now the second-largest market for e-learning in the world after the US and is projected to be worth over USD 3.5 billion by 2022[1]. EdTech startups secured $16 Bn in venture capital funding in 2020 alone, more than double the $ 7.1 Bn funding in 2019.[2] India has a total of five EdTech unicorns, three of which emerged in 2021; the sector's future evaluation is pegged at USD 30 billion[3] or 2,25,000 Crores which is more than double that of India's education budget.

This growth has been fueled by the rapid growth of internet users (India had 624 million active internet users as of Feb 2021[4]), particularly in Tier 3 and 4 cities. Even before the COVID-19, 51.25% of the traffic share was from 10 EdTech companies[5]. The pandemic and the resulting growth of online education accelerated this trend. India's had the second-longest school lockdown[6] which forced students towards a range of online solutions. According to BARC India and Nielsen, there has been a 30% increase in the time spent on education apps on smartphones since the lockdown[7].

[1] https://kr-asia.com/indias-edtech-market-to-grow-5x-to-reach-usd-3-5-billion-by-2022-blinc-invest
[2] https://www.holoniq.com/notes/16.1b-of-global-edtech-venture-capital-in-2020/
[3] https://www.india-briefing.com/news/profiling-indian-edtech-industry-us-10-billion-dollar-opportunity-24013.html/
[4] https://www.statista.com/statistics/309866/india-digital-population/
[5] https://inc42.com/features/edtech-startups-look-for-permanence-beyond-the-covid-19-lockdown-boom/
[6] https://news.careers360.com/after-uganda-india-saw-longest-covid-induced-school-closures-says-govt-citing-unesco-report
[7] https://www.financialexpress.com/brandwagon/ed-tech-platforms-cash-in-on-pandemic-posts-surge-in-users-and-time-spent/1947135/

The Evolving Policy and Legal Landscape

India lacks a consolidated law regulating the EdTech sector or EdTech companies; provisions are scattered across multiple pieces of legislation including intellectual property, consumer protection, data protection, education-specific laws and laws applicable to intermediaries.[8] India's National Education Policy emphasizes the use of technology for learning within and outside the classroom, teacher professional development and easing the administration of education. It calls for investment in the digital infrastructure, development of online teaching platforms and tools, creation of digital repositories and training of teachers. However, it does not spell out concrete measures to expand human capabilities or address the risks of lock-in, commercialization and data theft arising from the use of proprietary technologies. The earlier National Policy on Information and Communication Technology (ICT) in School Education 2012[9] focused on strengthening the ICT infrastructure, developing digital resources and promoting ICT use in school education, school management and capacity building of education personnel.

The government has also been running a range of technology-based interventions in education. The government launched the 'Digital India' initiative in July 2015, to strengthen online infrastructure and expand internet accessibility among citizens (for example, connecting rural areas to high-speed internet networks). The MoE has introduced SWAYAM, an online learning platform and is running a number of other learning platforms such as Diksha, e-pathasala, NROER (National Repository of Open Educational Resources), e-yantra (robotics education), FOSSEE (open source software for education), virtual labs and language learning programmes. During the pandemic, the government launched the 'Pradhan Mantri e-VIDYA', a digital education initiative, to boost interest in EdTech startups. Remote and distance learning tools and online student evaluation platforms were also launched. A range of similar measures was also introduced by the states[10][11]. The Indian K-12 EdTech market includes supplementary education, provision of learning content and test prep. The Post-K12 EdTech industry covers higher education (accounting for 60% of the market), technical skilling and test preparation for government and other jobs[12].

The regulatory context in the EdTech space in India is currently in flux. The Education Minister recently announced that the government is working on a policy to regulate the EdTech ecosystem[13]. A new Data Protection Bill is expected to receive Parliamentary approval in 2022.[14] The MoE has also developed guidelines for distance education.[15] The UGC has notified regulation for online and open distance learning programmes by higher education institutions[16] and is in the process of adopting modifications to ODL and Online Programme Regulation[17]. UGC and AICTE have recently instructed institutes to not outsource online education to companies, though they can hire their technology platforms[18]. They have also issued a notice to a few private universities that had tied up with EdTech companies to offer degrees and have warned them of derecognition if they enter into such impermissible arrangements.[19] The impending changes in the regulatory frameworks call for a deeper analysis of the policy framework in education. The

[8] https://samistilegal.in/regulatory-framework-for-ed-tech-companies/
[9] https://www.education.gov.in/sites/upload_files/mhrd/files/upload_document/revised_policy%20document%20ofICT.pdf
[10] https://www.education.gov.in/sites/upload_files/mhrd/files/irde_21.pdf
[11] https://www.ibef.org/download/sucess-story-edtech.pdf
[12] https://www.omidyarnetwork.in/wp-content/uploads/2020/06/20200527-EdTech-Report-Omidyar-V6.pdf
[13] https://pib.gov.in/PressReleasePage.aspx?PRID=1784582
[14] https://www.natlawreview.com/article/calm-storm-how-upcoming-data-protection-law-will-impact-edtech-india
[15] https://www.education.gov.in/sites/upload_files/mhrd/files/pragyata-guidelines_0.pdf
[16] https://www.ugc.ac.in/pdfnews/221580.pdf
[17] https://pqars.nic.in/annex/256/AU3083.pdf
[18] https://swarajyamag.com/news-brief/as-ed-tech-regulation-begins-industry-players-raise-alarm
[19] https://economictimes.indiatimes.com/tech/tech-bytes/education-institutes-ordered-to-cut-ties-with-edtech-firms/articleshow/88949181.cms?from=mdr

government has also issued an advisory against EdTech companies to the parents such as avoiding automatic debit options, carefully reading terms and conditions and recording the spam calls.[20]

At the heart of the recent push is the need for stronger consumer protection. The Consumer Protection (E-Commerce) Rules, 2020[21] cover dimensions like the use of misleading advertisements by the sector. The MoE, in Dec 2021, issued an advisory for students and parents looking up to online courses[22]. In response, the industry has come together to form an Indian EdTech Consortium under the overall framework of the Internet and Mobile Association of India (IAMAI) in an effort toward self-regulation[23].

Given the recent changes in the EdTech sector, it is critical to examine the evidence of the use of technology in education and particularly the track record of commercial actors. It makes some recommendations to address educational inequality and curtail commercialization in the sector.

INDIA'S EDTECH: PROBLEMS FROM AN INEQUALITY LENS

1. Inadequate physical access to technology, especially for rural learners

Only a fraction of Indian homes and learners have access to computers and the internet. Only 12.5% of Indian homes had access to the internet before the pandemic[24]. Only 4% of rural households had a computer and less than 15% of rural households had an internet connection[25].

Enhancing digital access at the school level or for teachers can be more effective in reaching a large number of students, particularly those from poor families. However, only 37.19% of schools in India have functional computer facilities (DISE 2019-20; 28.6% in government schools) and only 22.28% have internet facilities (11.58% in government schools). There are huge geographic differences varying between 12.7% in Assam and 99.3% in Chandigarh. Furthermore, even if schools are formally classified as digital schools, evidence from Maharashtra suggests that many of them lack appropriate or adequate equipment, access to existing resources may be constrained due to fear of equipment breaking down in the absence of mechanisms/funds for maintenance and frequent power cuts hamper its use[26].

At the same time, while 95% of teachers in both urban and rural areas (including both government and private schools) have access to devices, only 76% of government school teachers report having access to the internet on their phones.[27]

Furthermore, inadequate maintenance of the technology and technical support constitute additional

[20] https://www.ndtv.com/business/government-issues-advisory-against-ed-tech-companies-here-are-the-details-2668839
[21] https://www.indialawjournal.org/edtech-companies-under-the-consumer-protection-rules-2020.php
[22] https://theprint.in/india/education/dont-get-lured-by-ads-of-ed-tech-firms-do-your-research-to-avoid-fraud-govt-tells-parents/786555/
[23] https://indianexpress.com/article/explained/india-edtech-sector-self-regulation-7721488/
[24] https://theprint.in/opinion/who-goes-online-to-study-in-covid-times-12-5-homes-of-indian-students-have-internet-access/398636/
[25] Ministry of Statistics and Programme Implementation. Household Social Consumption on Education in India NSS 2017-18. New Delhi: National Statistical Office, (2019) accessed 03 December, 2020 https://bit.ly/2VzERQA
[26] https://factly.in/data-while-physical-infrastructure-improves-digital-infrastructure-remains-poor-in-schools-across-states/
[27] https://unesdoc.unesco.org/in/documentViewer.xhtml?v=2.1.196&id=p::usmarcdef_0000379115&file=/in/rest/annotationSVC/DownloadWatermarkedAttachment/attach_import_c8f877ed-79f7-4e6a-a756-024dafe5c273%3F_%3D379115eng.pdf&locale=en&multi=true&ark=/ark:/48223/pf0000379115/PDF/379115eng.pdf#%5B%7B%22num%22%3A632%2C%22gen%22%3A0%7D%2C%7B%22name%22%3A%22XYZ%22%7D%2C-1%2C794%2C0%5D

challenges. The extent of electrification and the regularity of its supply are additional constraints in the Indian context. According to a recent survey by Smart Power India, 35% of households in rural India receive less than 12 hours of electricity daily[28]. NITI Aayog also reported a lack of mobile network coverage in over 55,000 villages in the country, particularly in the northeast region.[29]

Recommendation:

- Set up detailed parameters regarding the quantity and quality of digital equipment and the requirement based on the number of students per class. Put in place mechanisms and funds for maintenance and repair and replenishment of resources.
- Ensure adequate infrastructure around schools (including infrastructure, software and electrification) and adequate maintenance and technical support of digital assets in use by schools and teachers. Deemphasize the individual and 'get as you pay' models which stratify education.
- Promote the creation of 'public community digital infrastructure' in education, to ensure universal access to a reasonable quality of digital access.

2. Prohibitive costs that deepen educational inequalities

The average price of an EdTech product on the Indian market is equivalent to 77.5% of the per capita income for its lowest wealth quintile. The average cost of products is estimated to be ₹ 20,000 per year[30] while the income of the bottom 20% of Indian households is 25,825 per year per capita[31]. Unsurprisingly, most EdTech offerings in India are currently focused on addressing the needs of the top quintile of the Indian income ladder.[32]

Not only are the poor excluded, but they are also more likely to be left dissatisfied with EdTech offerings. Only 18% of poor and lower-middle-class users are happy with the services offered by EdTech companies compared to 31% of the middle and high-income households.[33] Scalability and low costs are often achieved at the expense of failing to adapt to specific needs; for example, failing to develop materials in tribal languages and focusing on (official) language groups to keep unit costs lower.[34]

Hidden costs and other questionable marketing practices are additional challenges which are being addressed in a subsequent section. Furthermore, many services that were free at the start or during the course of the pandemic, may not remain so for long. Internationally, the COVID 19 Education Coalition, a coalition of 60 non-for-profit organizations has curated 913 'free tech resources for learning'; of these, only 312 resources are considered 'always free[35]'.

At the same time, some EdTech companies have been under the scanner for tax evasion. BYJU's received a show-cause over attempting to evade taxes.[36]

Recommendations:

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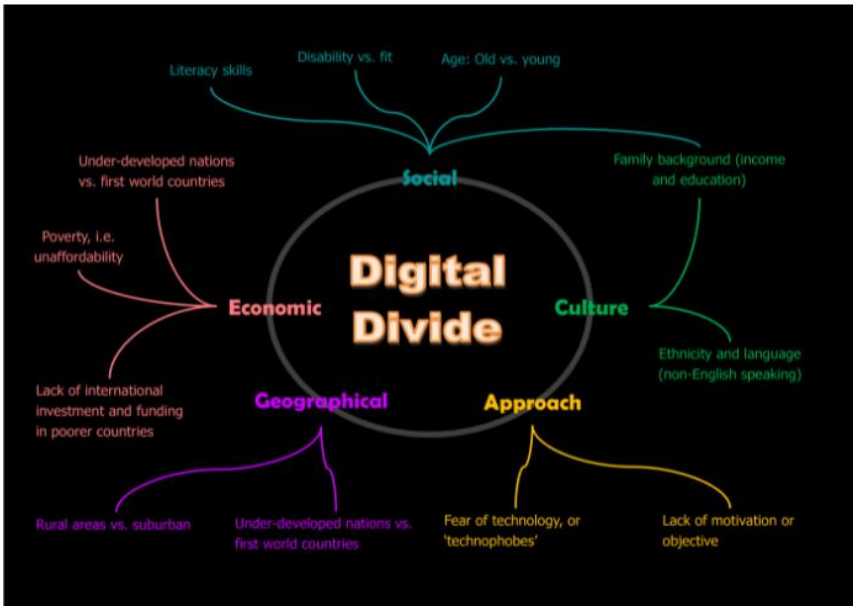
[28] https://smartpowerindia.org/media/1230/report_rural-electrification-in-india_customer-behaviour-and-demand.pdf
[29] https://www.niti.gov.in/sites/default/files/2019-01/Strategy_for_New_India_2.pdf
[30] https://centralsquarefoundation.org/wp-content/uploads/EdTech%20Lab%20Report_November%202019.pdf
[31] https://www.hindustantimes.com/india-news/number-theory-how-much-does-an-average-indian-earn-101610760612856.html
[32] https://www.pwc.in/assets/pdfs/industries/education/reimagining-the-role-of-technology-in-education.pdf
[33] https://www.omidyarnetwork.in/wp-content/uploads/2020/06/20200527-EdTech-Report-Omidyar-V6.pdf
[34] Problem Analysis and Focus of EdTech Hub's Work accessed on https://docs.edtechhub.org/lib/PBXBB7LF
[35] https://issuu.com/educationinternational/docs/2020_eiresearch_gr_commercialisation_privatisation/31
[36]https://www.moneycontrol.com/news/business/tax-evasion-BYJU'S-parent-faces-scrutiny-by-gst-intelligence-wing-6781601.html

- Not compromise with the principles of the Right of Children to Free and Compulsory Education Act, 2009 gives every child aged 6-14 years of age the right to free education.
- All software used in Indian classrooms must be Free Open Source. India must implement the recommendations contained in the 2012 Paris Open Educational Resources Declaration, recognizing their importance for strengthening the use of such resources while at the same time reducing the cost of education for the Government.
- Existing platforms like digital India may be promoted to develop content that is free for educational use.
- Put in place regulation of fees and other charges in the EdTech sector.

3. Multiple digital divides and discrimination

The introduction of educational technology does not erase the full gamut of social, cultural, geographic, economic and personal barriers that amplify each other to create digital divides[37]. All these factors instead contribute to creating digital divides. Globally, the use of technology is far from being an equalizer but is found to reinforce inequalities since it relies on a technology that is inaccessible for many who are poor and marginalized.



Thus, during the pandemic, India saw how class, caste and gender formed barriers to online instruction. Out of the poorest 20 % of households in India, only 2.7 % have access to a computer and 8.9 % to internet facilities. 96 % of STs and 96.2 % of SC households whose children are in school lack access to a computer[38]. During the pandemic, only 4% of SC/ST householders were reported to be studying online regularly (contrasted with 15% among other castes)[39]. Similarly, while 15% of the parents of SC/ST children were satisfied with the online study materials, the share was 26% for the others. The reliance on online modes of delivery placed the burden of ensuring education on individual families instead of delivering on the promise of a public education system that delivers universal quality education for all. In the ASER 2020 and 2021 surveys, children in families with parents educated up to the 10th standard were almost twice as likely to have access to a smartphone for instruction during the pandemic and almost twice as likely to receive family support for learning.[40] Clear international evidence points towards inequalities in experiencing remote schooling during the pandemic based on family wealth, household head's education and urban and rural locations[41] that deprive children of already marginalized households of access to education, pushing them into child labour and widening

[37] https://medium.com/@ShwetaBarupal/digital-divide-a-critical-analysis-7156333237f7
[38] https://www.oxfamindia.org/knowledgehub/workingpaper/inequality-virus-india-supplement-2021
[39] https://ruralindiaonline.org/en/library/resource/locked-out-emergency-report-on-school-education/
[40] http://img.asercentre.org/docs/aser2021forweb.pdf
[41] https://www.sciencedirect.com/science/article/pii/S0738059321000997#tbl0005

learning achievement gaps.

The digital divide is gendered. Only 29% of internet users in India are women[42] and 71% of phones are owned by men[43]. In one study, 57.6% of adolescent girls felt that boys get easier access to digital facilities in schools and colleges; 83% of girls on average received less than an hour of computer lab time in a week in school[44]. Affordability of data for internet access was a challenge with 84% of the girls reported facing difficulties spending on internet access. Further, harmful gender norms made parents reluctant to allow girls to access devices.

At the same time, there are specific challenges pertaining to the use of technology by persons with disabilities. 56.5% of children with disabilities were struggling to attend classes; 39% of visually impaired students were unable to understand lessons with many students talking simultaneously and 44% of children with disabilities complained that no sign language interpretation was available on webinars[45]. The use of EdTech must ensure the application of three Universal Design for Learning principles of representation, engagement, and action and expression[46].

The cost of ignoring digital divides has been heartbreaking. India's Supreme Court has expressed the fear that the digital divide caused by online classes risks defeating the fundamental right of every child to education[47]. Many instances of children committing suicide seeing their educational opportunities blocked in the absence of online access have emerged.[48]

[42] https://economictimes.indiatimes.com/tech/internet/only-29-female-internet-users-in-india-unicef-report/articleshow/62027590.cms?from=mdr
[43] https://www.nationalheraldindia.com/india/in-india-only-38-of-women-use-mobile-phones-while-it-is-71-for-men-study
[44] https://www.c3india.org/uploads/news/Bridging_the_Digital_Divide-Policy_Brief_2021_(website)1.pdf
[45] https://www.business-standard.com/article/education/43-children-with-disabilities-planning-to-drop-out-of-e-education-survey-120071800335_1.html
[46] http://udlguidelines.cast.org/
[47] https://www.thehindu.com/news/national/supreme-court-flags-consequences-of-growing-digital-divide/article36902976.ece
[48] https://timesofindia.indiatimes.com/city/mysuru/mysuru-no-smartphone-for-e-classes-girl-commits-suicide/articleshow/77626367.cms

There is not one, but multiple digital divides. Social and personal characteristics impact the resources available to individuals and contribute to creating unequal digital access[49]. While the focus in the media has been on the sheer availability of digital tools, there are four successive levels of access including mental access (extent of interest/anxiety to engage with content), material access (ownership of devices/network connections), skills access (digital skills/extent of education or social support) and usage access (opportunities for usage). Measures to remove the digital divide would need to address all these levels of access. Reducing digital inequality, would, therefore, involve also enhancing broad social mobility, providing cheaper digital technology, making it easier to use, increasing the scale of programs explicitly targeting disadvantaged groups and drawing up rules and regulations to promote the beneficial use of digital media.

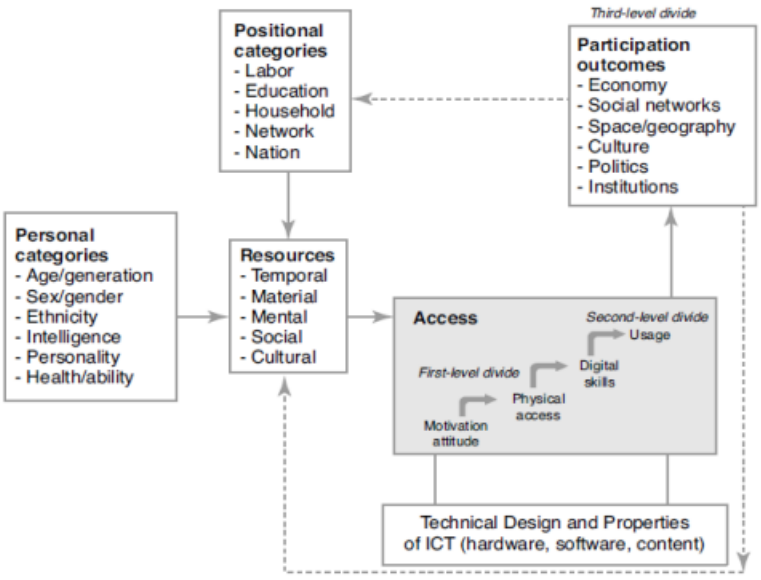


Figure 1: A Causal Model of Resources and Appropriation Theory of the Digital Divide

At the same time, steps need to be taken to ensure that digital interventions do not do harm. Materials need to be in the students' mother tongue (including tribal languages) and must not propagate gender and social stereotypes. Indeed, language is another significant challenge. Indian language internet users account for nearly 75% of India's internet user base in 2021.[50] Hindi has emerged as the most consumed language on the internet in India[51]. However, a significant share of the EdTech content in India continues to be in English. Students struggle with content that was not in their native language; some of the reviews of vernacular materials also suggest that Hindi-language learning content was often poorly made and less likely to be used.[52] Many of the education apps used for transaction teaching online do not follow accessibility protocols for persons with disabilities as prescribed by the NIC[53].

Recommendations

- Increasing the scale of programs explicitly targeting disadvantaged groups by supporting ICT access, skills and use by women and girls and Dalits, Adivasis, Muslims, persons with disabilities and other marginalized communities.
- Encourage role models of the use of technology by girls and children from marginalized communities; undertake parental sensitization on issues of technology use by students from these communities to address harmful gender norms inhibiting technology use by girls.

[49] https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/07/Closing-the-Digital-Divide-by-Jan-A.G.M-van-Dijk-.pdf
[50] https://assets.kpmg/content/dam/kpmg/in/pdf/2017/04/Indian-languages-Defining-Indias-Internet.pdf
[51] https://www.nextbigbrand.in/90-of-new-internet-users-in-india-access-content-in-vernacular-languages/
[52] https://centralsquarefoundation.org/wp-content/uploads/EdTech%20Lab%20Report_November%202019.pdf
[53] https://nicsi.com/accessibility-statement.html

- Track the extent to which marginalized communities, particularly girls, are able to access educational technology for quality, interactive education within schools and this evidence to identify and address barriers to the adoption of technology.
- Ensure that the content used is representative of diverse human groups (e.g. gender, disability status, cultural background, social class), uses children's own languages, provides scope for flexibility and does not inadvertently promote harmful cultural or gender stereotypes[54].
- Promote the development of materials of a high standard in the multiplicity of languages spoken in India.

4. Weak adherence to data privacy, child protection and other regulatory standards

According to a Data Security Council of India (DSCI) report, India has been identified as the second most cyberattacks affected country between 2016-18[55]. According to the Indian Computer Emergency Response Team, the government agency for computer security, the number of cybercrimes increased 572% times in three years between 2018 and 2021.[56] India's data privacy rules do not provide any specific provisions for the protection of children's data.[57] India does not currently have regulations on the collection, storage, sharing and harvesting of user data by EdTech companies.

Many EdTech platforms in India collect, buy, aggregate and harvest data to get a 360° view of the child's academic context and the psychosocial and economic behavior of households[58]. This creates a high risk of misuse of data pertaining to minors[59]. Many significant data breaches have been reported over the last two years. In 2020, Unacademy was targeted by a cyberattack allegedly resulting in the exposure of over 20 million user accounts which were sold on the dark web[60]. In another incident, the online school management platform Skolaro had exposed data belonging to 50,000 students (and their parents including scanned copies of passports) and staff.[61] In 2020, the personal data of 2.8 lakh students of WhiteHat Jr was left exposed. [62] The proposed Data Protection Bill 2021 is expected to bring more robust safeguards including parental consent, however, this legislation is not yet in place. The Joint Parliamentary Committee has made several recommendations to the same to strengthen data protection[63] and there are additional implementation challenges with respect to some of the recommendations made (e.g. data security for submission of age verification).

Furthermore, there are dangers in unsupervised internet use by children. 37% of Indian parents in 2018 reported that their children experienced cyberbullying.[64] The India Child Protection Fund (ICPF) recorded a 95% surge in child pornography traffic after the announcement of the COVID-19 lockdown[65]. Other risks

[54] https://files.eric.ed.gov/fulltext/EJ835240.pdf
[55] https://inc42.com/buzz/cyber-attacks-india/
[56] https://www.heraldgoa.in/Edit/India-needs-a-strong-firewall/189173
[57] https://privacydesk.in/publications/articles/data-privacy-in-ed-tech-companies/
[58] https://itforchange.net/platform-capitalism-and-edtech
[59] https://www.natlawreview.com/article/calm-storm-how-upcoming-data-protection-law-will-impact-edtech-india
[60] https://www.livemint.com/technology/tech-news/over-20-mn-unacademy-user-accounts-exposed-in-data-breach-report-11588775083410.html
[61] https://inc42.com/buzz/exclusive-edtech-startup-leaks-data-of-over-50k-indian-children/
[62] https://www.thequint.com/cyber/whitehatjr-bug-exposed-personal-data-of-28-lakh-students-karan-bajaj
[63] http://bwlegalworld.businessworld.in/article/Children-s-Personal-Data-Data-Protection-Bill-2021-And-The-Impact-On-EdTech-Companies/30-03-2022-424031/
[64] Cook, Sam. (2020). "Cyberbullying facts and statistics for 2020". Comparitech, accessed 15 December, 2020 https://www.comparitech. com/internet-providers/cyberbullying-statistics/
[65] "95% jump in online child porn traffic; NCPCR sends notice to Google, WhatApp". (2020). The National Herald, accessed 15 December, 2020 https://www.nationalheraldindia.com/national/95-jump-in-online-child-porn-traffic-ncpcr-sends-notice-to-google-whatapp

include sexual harassment and enticement to illegal behaviour. Neo-literate families have been the least equipped to deal with these new threats. EdTech companies Space2Grow and Vedantu have launched a benchmarking report for online child safety in the education space which has highlighted four indicators including accountability, reporting and redressal, data privacy and handling, and the digital risks and harms[66]. The government has also taken some measures. Thus, the Ministry of Home Affairs has sanctioned a 'Cyber Crime Prevention against Women and Children (CCPWC)' scheme which comprises an online cybercrime reporting portal.

Recommendations:

- The government must legislate a data governance regime for the collection, custody, ownership, sharing and analysis of data on children and their families. Steps must be taken to ensure data privacy, particularly to avoid personally identifiable data pertaining to minors being shared with other players by service providers, vendors, schools or education functionaries. Data pertaining to children must be stored only on Indian servers.
- Take steps to protect children online including steps to curb cyberbullying or sexual harassment, including ensuring concrete action by EdTech companies. Concrete steps need to be taken to mitigate the risks faced by girls including mechanisms for girls to report abuse and building awareness about pathways available to receive support.
- Technology vendors must adhere to cybersecurity standards to ensure that equipment and software are safe for the use of children.
- Undertake awareness building of parents and communities regarding safeguarding issues, and appropriate protocols for children's online use including preventing over-exposure of children.
- Strengthen transparency of the information served by EdTech firms by providing users with the right to ask for a copy of the information that companies hold about this. Similar measures have been introduced in the UK[67].

5. Weak consumer protection

There have been instances of false advertising and impractical claims by the EdTech companies to lure parents into buying their products[68] often followed by difficulties in getting refunds.

For instance, Congress MP Karti Chidambaram had written a letter to the education minister in 2021 about the "false claims" companies make in their advertisements. His letter also highlights opacity in terms of key metrics of success like "improvement in grades." The Central Consumer Protection Authority (CCPA) has introduced draft guidelines to regulate misleading ads[69]. There is a need to regulate advertising more broadly. Among active users, over 55% cite digital ads as their primary source of awareness[70]. Customer Acquisition Cost for an ed-tech company operating in the K-12 segment in India varies from INR 10,000–60,000 (USD 137–821) per student[71]. This is equivalent to the overall government spending per child in its schools which varies between 10,000 in Bihar and 60,000 INR in Himachal Pradesh[72].

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[66] https://www.edexlive.com/news/2022/jan/29/report-discusses-how-to-prioritise-child-safety-in-a-world-thats-increasingly-going-virtual-27160.html
[67] https://www.gov.uk/data-protection/find-out-what-data-an-organisation-has-about-you
[68] https://theprint.in/india/governance/can-coding-make-children-billionaires-govt-says-ads-of-ed-tech-platforms-are-misleading/598932/
[69] https://consumeraffairs.nic.in/sites/default/files/file-uploads/latestnews/Draft%20guidelines%20for%20stakeholders%20consultation.pdf
[70] https://www.omidyarnetwork.in/wp-content/uploads/2020/06/20200527-EdTech-Report-Omidyar-V6.pdf
[71] https://kr-asia.com/indian-edtech-startups-go-global-to-drive-growth-part-2-of-2
[72] https://www.indiaspend.com/budget/budget-explainer-how-india-funds-public-school-education-718488

There are also concerns about unethical revenue models practised by some EdTech companies with anxious parents being pushed to pay for the entire course fees upfront and then finding themselves refused promised refunds[73]. Progressively, the payment may actually be a loan[74] pushing poor parents into debt[75]. Many companies offer a free-premium business model where services appear to be free. However, these often involve incurring expenses to utilize the full gamut of services and the apparently free service is used to obtain customer data which is harvested to market paid products. In many instances, these charges may not be fully apparent given complaints of auto-debit facilities being activated as part of the subscriptions.

The government, taking cognizance of the situation, had issued an advisory cautioning against false claims by EdTech companies.[76] It is critical to not conflate the educational impact of EdTech platforms with the number of their subscribers. Much information about the performance of EdTech companies, which is in the public domain, is about the number of customers rather than the educational outcomes achieved. Even on those criteria, it would be critical to note that 88% of the total capital inflow to EdTech was for entrance exam preparation and online certification[77] instead of focusing on more pedagogically significant endeavors. Much of the recent innovation in the EdTech sector has been more on new modes of content delivery. Good quality content has been limited and there is limited differentiation between the various products delivered by various companies[78]. The presentation of content is given prime importance over more meaningful modes - teachers often follow a pre-recorded script while they are filmed, the aim being to ensure quality through "uniform" content and pedagogy across lectures.[79]

Recommendations

- Enforce existing regulations that protect parents
- EdTech subscriptions need to be decoupled from loans and companies must be checked from paying enrollment-linked sales incentives to education sales advisors to curb aggressive sales.
- Strengthen grievance redress mechanisms to provide recourse in instances of malpractice by companies

6. Absence of mechanism to transparently assess the effectiveness of new educational technologies and materials.

India lacks a formal public structure or process for assessing new technologies or materials being introduced. Effective EdTech programmes focus on enabling educational change and not delivering technology. They are characterized by a clear and specific curriculum focus, uses relevant curriculum materials and include evaluation mechanisms that go beyond outputs[80]. The use of technology for teaching should not preclude the space for a two-way interface to enable interaction between teachers and students.

[73] https://www.enidhi.net/2021/05/unethical-fraudulant-pricing-structure.html
[74] https://inc42.com/features/indian-edtech-startup-valuations-shaky-grounds/
[75] https://theswaddle.com/how-edtech-firms-are-capitalizing-on-the-fear-of-a-covid-learning-gap/
[76] https://pib.gov.in/PressReleasePage.aspx?PRID=1784582
[77] https://inc42.com/datalab/test-prep-online-certification-startups-dominate-vc-funding-india-edtech-market/
[78] https://www.pwc.in/assets/pdfs/industries/education/reimagining-the-role-of-technology-in-education.pdf
[79] https://femlab.co/2021/10/26/will-edtech-go-the-way-of-the-gig-economy
[80] https://www.heart-resources.org/wp-content/uploads/2014/10/Educational-Technology-Topic-Guide.pdf

Recommendations

- Platform businesses must have no say in laying the direction of core educational services like the development of curricula, pedagogy and assessment.
- All distance learning materials and activities must follow the Principles for Digital Development[81] which have been designed to help integrate best practices into technology-enabled programs and are intended to be updated and refined over time.
- Every EdTech program must have a clear program design that delineates its aims and alignment to accepted education policies and principles. It must highlight the risks and potential downsides and demonstrate that the expected benefits outweigh intended and unintended harm possibilities.
- Develop national standards and formal public structure or process to assess new technologies or materials being introduced in educational settings or for children. This should include provisions pertaining to teaching quality, students' experience and extent of compliance with existing curricular objectives. At the same time, standards such as ISO 21001:2018 provide management system standards[82] for educational organizations by dividing the process of service provision and monitoring at different checkpoints. Permission to operate can be made conditional on meeting basic markers in such checkpoints during service delivery[83].
- A review committee could be established to review EdTech content which should involve teachers and their organizations and teachers must be involved in the pre-evaluation, implementation, and assessment of digital technologies in education.
- Pilots would be essential for any new and unproven model or technology, and the temptation to start a program on the scale must be resisted to avoid wastage of time and resources. Pilots relying on in-school infrastructure should be prioritized.

7. Inadequate involvement of teachers

Effective delivery of online or distance education involves adequate preparation and training of teachers. Interventions with teachers need to not only address the acquisition of specific skills but also address teachers' attitudes to technology integration and their sense of computer self-efficiency. UNESCO has created a set of competencies, skills and attitudes for teachers in the use of technology for learning[84] which could form the basis of any framework in India and should be built into both pre-and in-service teacher training.

During the pandemic, most teachers experienced difficulties in making the transition to online instruction (70.5 per cent according to Jal and Bawane[85], 2021; 84 per cent according to Vyas, 2020[86])[87]. During the pandemic globally[88] only about 29% of respondent teacher and education employee organizations felt that governments had provided adequate and sufficient support for teachers during the transition from onsite

[81] https://digitalprinciples.org/principles/
[82] https://www.iso.org/obp/ui/#iso:std:iso:21001:ed-1:v1:en
[83] https://thebastion.co.in/politics-and/education/making-a-case-for-a-goldilocks-regulation-of-the-ed-tech-sector
[84] UNESCO. (2011). UNESCO ICT Competency Framework for Teachers. In: UNESCO.
[85] Jal, M. and Bawane, J. March 2021. School education response to COVID-19 in India & way forward: a national report. Centre for Educational Studies, Indian Institute of Education.
[86] Vyas, A. 2020. Government and Private Schools During COVID-19. Status Report. Oxfam, India.
[87] https://unesdoc.unesco.org/in/documentViewer.xhtml?v=2.1.196&id=p::usmarcdef_0000379115&file=/in/rest/annotationSVC/DownloadWatermarkedAttachment/attach_import_c8f877ed-79f7-4e6a-a756-024dafe5c273%3F_%3D379115eng.pdf&locale=en&multi=true&ark=/ark:/48223/pf0000379115/PDF/379115eng.pdf#%5B%7B%22num%22%3A632%2C%22gen%22%3A0%7D%2C%7B%22name%22%3A%22XYZ%22%7D%2C-1%2C794%2C0%5D
[88] Education International, Covid-19 and Education: How Education Unions are Responding, Survey Report,, p. 9

to digital and distance learning. When schools reopened, over 60% of teachers felt they were not trained to maintain hybrid teaching with some students online and others offline; over 70% of government school teachers reported not having been provided with the necessary equipment and data to conduct online classes[89].

It is critical to involve teachers in decisions related to the rollout of EdTech in their classrooms. A recent survey suggests that the most frequently cited reason for teachers' reluctance to adopt new EdTech tools is their lack of time (31%), training (16%), school management/infrastructure support (14%) or good EdTech products (13%)[90]. One research undertaken in Gujarat into teachers' experiences during a government EdTech intervention[91] highlights the criticality of taking into consideration teachers' own mental models about how learning happens. Oxfam India's 2020 Rapid Survey at the start of the pandemic showed that 84% of teachers struggled to deliver education through digital modes.[92] In 2021 when schools reopened, 60% of teachers reported feeling[93] inadequately trained to maintain hybrid teaching.

At the same time, it would be vital to critically examine the labour practices of the EdTech industry as they apply to educators and other personnel. It is estimated that this sector in India employs some 90,000 people[94] and hiring is reported to have grown to 50-60% compared to the pre-COVID-19 period; it can be expected to continue to grow for a few years to come[95]. Many of these jobs are in the gig sector and EdTech sector employees often lack social protection[96]. Furthermore, reports suggest that EdTech companies de-emphasize qualifications, experience and pedagogy instead placing emphasis on educators' physical appearance and soft skills including tone, voice and rapport building capabilities,[97] thereby facilitating a systematic deskilling of labour. Media articles report toxic work cultures, where the sales culture affects the mental health of employees[98] [99] and predatory data practices to secure new clients.[100]

Recommendations:

- Technology should support and not replace teachers in classrooms and its use should supplement and not replace face to face teaching and learning.
- Teachers and other education personnel must be supported to use education technology. They must be equipped with necessary devices, provided with data and given capacity building on the use of this technology. The use of ICT must be incorporated in pre- and in-service teacher training.
- Educational technologies must be owned by the schools and teachers and the process of its rollout should strengthen teachers' agency and school autonomy. Teachers must have the competence and be free to adapt digital technologies to local contexts, and the authority to rearrange online

[89] https://www.oxfamindia.org/knowledgehub/oxfaminaction/status-report-education-during-pandemic-government-and-private-schools
[90] https://www.linkedin.com/pulse/consumerizing-edtech-indias-schools-ravishankar-g-v/
[91] https://journals.sagepub.com/doi/pdf/10.1177/0973184918803184
[92] https://www.oxfamindia.org/knowledgehub/oxfaminaction/status-report-government-and-private-schools-during-covid-19
[93] https://www.oxfamindia.org/knowledgehub/oxfaminaction/status-report-education-during-pandemic-government-and-private-schools
[94] https://www.ibef.org/industry/education-sector-india.aspx
[95] https://economictimes.indiatimes.com/jobs/edtech-sector-to-consolidate-in-hiring-investments-as-schools-colleges-open-experts/articleshow/87553981.cms
[96] https://femlab.co/2021/10/26/will-edtech-go-the-way-of-the-gig-economy/
[97]https://femlab.co/2021/10/26/will-edtech-go-the-way-of-the-gig-economy
[98]https://startuptalky.com/BYJU'S-work-culture/
[99]https://restofworld.org/2021/inside-india-edtech-BYJU'S/#:~:text=The%20sales%20culture%20at%20BYJU's,a.m.%2C%20to%20avoid%20abuse.%E2%80%9D
[100]https://restofworld.org/2021/inside-india-edtech-BYJU'S

teaching materials and methodologies to best serve local requirements.

8. Rising commercialization of education

Education is a public good and needs to be universal, equitable, of acceptable quality, and not stratified based on one's ability to pay. The reliance on market-driven EdTech solutions risks converting teachers and students into consumers of the content generated elsewhere. The Special Rapporteur on the Right to Education has emphasized that "the massive arrival of private actors through digital technology should be considered as a major danger for education systems and the right to education for all in the long term.[101]" The pandemic has fueled the rise of corporate and state-controlled platform ecosystems[102] which reinforce traditional exclusions[103] and facilitated privatization of education.[104] It has also triggered widespread complaints, especially on social media and debates in Parliament and triggered the intention of the government to introduce regulation. This is despite the long-held constitutional view that education institutions in India must be not-for-profit. The government needs to step in and prevent malpractices, not only caution citizens about their existence. In 2021, China, which has one of the most advanced EdTech sectors, banned for-profit EdTech[105] with a view to addressing educational inequality[106]. India too needs to step in to end malpractice arising from profit motivation. This should be done through a legal framework since past commitments to self-regulation by tech behemoths like Google and Amazon have failed. and they are under investigation in India and other jurisdictions for anti-competitive and fraudulent market practices.[107]

Recommendations:

- Address commercialization of education. India may also consider a ban for-profit EdTech companies similar to the one in China.
- All distance learning materials and activities must follow the Principles for Digital Development[108] which have been designed to help integrate best practices into technology-enabled programs.

9. Recognize the broad limitations of the use of educational technology

While the government has embraced online and digital education as a matter of policy, it would be critical to ensure that it is not a solution to the range of fundamental problems affecting India's education sector. Any implementation of EdTech interventions must be grounded in a recognition of the strengths and weaknesses of the medium. Inappropriate use of technology can cause harm and this needs to be studied extensively before being promoted. Indeed, it has been argued that the harms of technology use are visible much later while the benefits are immediately visible and this needs to be factored into adoption.[109]

Global evidence of the impact of online learning shows that online modes of delivering education do not

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[101] U.N. Special Rapporteur on the Right to Education, Right to Education: Impact of the Coronavirus Disease Crisis on the Right to Education—Concerns, Challenges and Opportunities, U.N. Doc. A/HRC/44/39 (15 June – 3 July 2020), https://undocs.org/A/HRC/44/39 [hereinafter Rapporteur Right to Education].

[102] José Van Dijck, Seeing the forest for the trees: Visualizing platformization and its governance, New Media & Soc'y (2020), https://journals.sagepub.com/doi/full/10.1177/1461444820940293.

[103] Concept Note for a Digital New Deal, IT for Change (2020) https://itforchange.net/digital-new-deal.

[104] Ben Williamson & Anna Hogan, The Edtech Pandemic Shock (7 October 2020), https://www.worldsofeducation.org/en/woe_homepage/woe_detail/16856/the-edtech-pandemic-shock-byben-williamson-anna-hogan.

[105] https://technode.com/2021/07/26/chinese-edtech-upended-by-sweeping-regulations/

[106] https://www.protocol.com/china/china-edtech-crackdown-education-inequality

[107] https://itforchange.net/platform-capitalism-and-edtech

[108] https://digitalprinciples.org/principles/

[109] https://pggalalis.com/postmans-five-laws-of-technology/

automatically translate into a better learning experience.[110] Increasing access to home computers among students who do not already have access is unlikely to greatly improve educational outcomes; some experimental evidence suggests that standalone interventions focusing on the distribution of devices have only a weak negative impact on learning[111]. Indian evidence preceding the pandemic shows that the provision of hardware alone is unlikely to improve learning outcomes; neither does it correlate with the time students use given products[112].

Pedagogically, online learning comes with several disadvantages. This includes lower engagement and completion rates compared to conventional face to face instruction something that may be linked to student motivation.[113] Staying on task is also less likely with digital learning.[114] Even for adult learners, only a small margin of students can complete their studies through unassisted learning platforms; a recent study on Massive Open Online Courses showed a 3.13% completion rate in 2017-18[115]. EdTech leaders admit that values like empathy, teamwork and other life skills can be learnt only in a school, and not by being tethered to a digital device[116].

Talking about the experience during the pandemic, the APU (2020) reported, "most … online options have proved to be sub-optimal, pedagogically unsound and inadequate substitutes of face-to-face interactions[117]." Teachers of primary school students, in particular, expressed concerns about engaging their students meaningfully through online education interventions. They were concerned about their inability to address the differential learning needs of students and the additional burden faced by students who may be struggling with the subject.[118] The isolation of online instruction has historically been felt by students too[119]. About 31% of parents of children in grades 1–5 are disinclined to purchase EdTech due to the lack of teacher and peer interaction[120].

Further, there is also the danger of addiction to digital platforms and devices. In India, at least 24.6 per cent of adolescents have problematic internet use or internet addiction disorder.[121] The excessive use of the internet plays an important role in initiating and increasing sleep disturbances within the younger communities.[122] Children from marginalized groups are much less likely to receive parental care/constraints on the use of devices.

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[110] https://idronline.org/article/education/edtech-in-india-no-checks-in-place/
[111] https://www.nber.org/papers/w23744
[112] https://centralsquarefoundation.org/wp-content/uploads/EdTech%20Lab%20Report_November%202019.pdf
[113] https://www.researchgate.net/profile/Arshad-Ahmad-Najar/publication/353580871_A_Systematic_Review_of_Online_Learning_during_COVID-19_Crisis_An_Indian_Experience/links/6104005f1e95fe241a99c43a/A-Systematic-Review-of-Online-Learning-during-COVID-19-Crisis-An-Indian-Experience.pdf
[114] https://time.com/3858309/attention-spans-goldfish/
[115] https://www.insidehighered.com/digital-learning/article/2019/01/16/study-offers-data-show-moocs-didnt-achieve-their-goals
[116]https://www.livemint.com/news/india/we-want-to-define-the-future-of-learning-byju-raveendran-11611846479742.html
[117] APU, 2020. Myths of Online Education. https://azimpremjiuniversity.edu.in/SitePages/pdf/Myths_of_online_education.pdf.
[118] Singh, A., Satyavada, R.S., Goel, T., Sarangapani, P. and Jayendran, N. 2020. Use of EdTech in Indian School Education during COVID-19 - A Reality Check. Economic & Political Weekly, 55(44). https://www.epw.in/journal/2020/44/commentary/use-edtech-indian-school-education-during-covid-19.html
[119] https://d1ns4ht6ytuzzo.cloudfront.net/oxfamdata/oxfamdatapublic/2022-03/Status%20of%20education%20report_1.pdf?DUJL26fAPq5Pr2kwIjZ8Hnh4H7F9wWyW
[120] https://www.omidyarnetwork.in/wp-content/uploads/2020/06/20200527-EdTech-Report-Omidyar-V6.pdf
[121] https://www.ijpn.in/article.asp?issn=2231 1505; year=2018;volume=15;issue=1;spage=61;epage=68;aulast=Maheshwari
[122] Alimoradi, Zainab; Lin, Chung-Ying; Broström, Anders; Bülow, Pia H.; Bajalan, Zahra; Griffiths, Mark D.; Ohayon, Maurice M.; Pakpour, Amir H. (2019). Internet addiction and sleep problems: A systematic review and meta-analysis. Sleep Medicine Reviews, (), S1087079219300267–. doi: 10.1016/j.smrv.2019.06.004

At the same time, the use of technology does not free one from bias. Thus, there is ample evidence of bias in algorithmic systems[123] given that formulas that drive them are designed by people whose biases they may reproduce[124]. In 2021, UNESCO announced the signing of an agreement establishing the ethical use of AI.[125] [126]

Recommendations:

- Technology should not be introduced to an educational environment if the pedagogical reasons for it are not clear and without an analysis of the pros and cons of such a move.
- India must ban black-box algorithms and mandate algorithmic audits in education, to reduce possible harm from EdTech.
- More evidence on what works and how. EdTech companies' reports must include disaggregated indicators and their annual reports must indicate whether investments are improving the education outcomes of students and disclose any unintended negative outcomes that require remedial action. More research is needed to understand the best ways to address wealth, gender and social inequalities in the use of technology.

Recommendations for the Government

1. India needs a holistic EdTech policy that carefully analyses the benefits and drawbacks of EdTech in education.
2. Address these issues through justiciable frameworks since self-regulation by EdTech companies is not a workable proposition. These measures would need to be backed by punitive measures to address fraudulent practices.
3. Establish a grievance redressal mechanism. The government must establish a responsive and accountable grievance redressal mechanism to handle EdTech related complaints by parents and children.
4. Remember that tech-based solutions are not always the right answers. Even in times of crisis like pandemics, governments also need to consider low- or no-tech solutions.

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[123] https://www.gov.uk/government/publications/cdei-publishes-review-into-bias-in-algorithmic-decision-making/main-report-cdei-review-into-bias-in-algorithmic-decision-making

[124] https://www.edweek.org/leadership/ed-tech-companies-should-open-algorithms-to-scrutiny-report-suggests/2017/08

[125] https://incyber.fr/en/towards-an-international-regulation-of-algorithms/

[126] https://en.unesco.org/news/unesco-member-states-adopt-first-ever-global-agreement-ethics-artificial-intelligence