Education and Technology

A Way Forward for Inclusive Growth

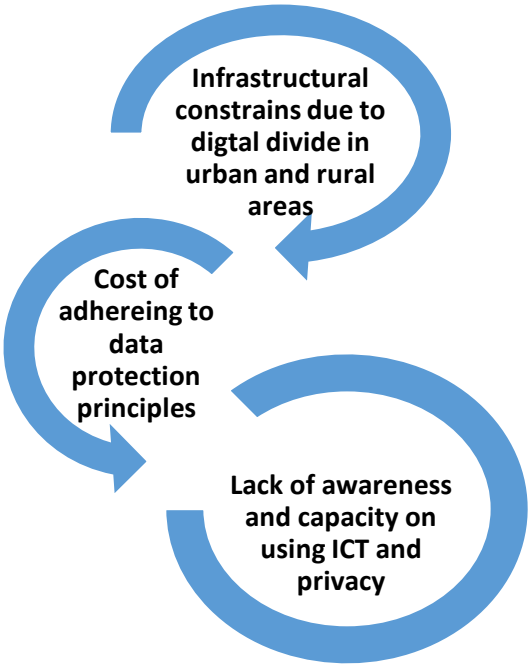
Introduction

There has been a wave of increased use of technology in various sectors, which require the development of new skills and governance models to optimise the use of technology. The education sector is also going through a similar wave, through investment in education technology by the government and private players, which is aiming to make the education more inclusive in India. In light of this, it becomes pertinent to assess the interaction of educational institutions with technology and bring forth concerns related to access, inclusivity and enabling policy environment.

With a majority of schools in India functioning in rural and semi-urban areas, infrastructure and capacity constraints in the adoption of Information and Communication Technology (ICT) by educational institutions as well as the burden of forthcoming data and privacy regulations has come to the forefront. This Policy Brief analyses these challenges and makes recommendations for the optimum and ethical use of technology in educational institutions.

Key Assessments

Infrastructural Constraints in Adoption of ICT: Aiming to bring more inclusivity within the education sector, the government has launched the *Samagra Shiksha* scheme aimed at digitising the learning in classrooms by providing computers to students, smart-boards, etc.[1] The Draft National Education Policy 2019 (NEP), which is currently under consideration also aims at digitising schools at all levels.[2] Moreover, 3,000 ed-tech start-ups have been incorporated in the last three years in Asia-Pacific.[3] While these initiatives



are a step forward in the right direction but there are constraints as 84 percent of all schools in India are in rural areas,[4] and there exist significant rural-urban digital as only 5 percent of students have access to the internet on computing devices as compared to 27 percent in India.[5] Educational institutions in rural areas face infrastructural obstacles, such as lack of equipment – computers, unstable electricity[6] connection, lack of digital tool kits for schools.[7] Additionally, in rural areas, internet usage has mostly been mobile-driven, which may not be the best platform for engaging with ICT learning tools. Such infrastructural limitations have become even more pertinent in the COVID crisis, as many educational institutions have shifted their operations to online learning. In such a scenario, the rural and urban digital divide and difficulties in access to ed-tech tools would significantly affect learning outcomes for students.

Transition Cost of Adopting Data Protection Principles: Currently, the rules for maintaining students' records are made by the government as stipulated under the Right of Children to Free and Compulsory Education Act.[8] At present, most schools collect information related to students at the time of enrolment through non-automated means using simple admission forms. With the implementation of the Personal Data Protection Bill 2019 (PDPB), there will be an additional obligation on educational institutions to adhere to purpose and collection limitations for information gathered on students as data fiduciaries.[9] For instance, segregating personal and sensitive personal data,[10] stating the purpose of collecting[11] the information in admission forms, making provision for taking explicit consent,[12] transfer, etc. This would require the educational institutions to make modifications to their admission forms, introduce privacy policies. Imbibing such changes would put an additional financial and administrative burden on schools.

While schools in urban areas and graduate-level institutions might already be using automated means of collecting and maintaining records and would have more human resources to invest in making such transition smooth however, schools in rural areas will face constraints in this regard. Many of the schools in rural areas are run by just one or two teachers without any administrative support staff.

In this regard, a report by NITI Ayog observed that the adoption of ICT tools can make school administration smoother and cost-effective but due to the existing digital divide, the adoption of computers for school administration is still very limited.[13] Considering the human resource and limited

use of ICT for school administration the cost of adopting new regulation as stipulated by the PDPB would impose a disproportionate cost for educational institutions in rural areas.

Lack of awareness and Capacity: There has been an increase in ICT learning tools and ed-tech applications to give more access to ensure adequate learning. However, two issues emerge from existing capacity constraints. One is about the usage of ICT learning tools and the other is about a lack of sensitivity towards privacy and data protection concerns.

There is a constraint within the capacity to use ICT tools as teachers, students and the school administration are not used to the technology and lack the ICT skills to make lesson plans, change in content, new forms of assessment and use it for school information management system.[14] This is particularly problematic for rural areas, as many users in rural areas are first-time users of the internet and might not be willing to make such transitions. Another capacity constraint is due to the language barrier, as most of the ICT learning tools primarily operate in English and many schools in rural areas operate in regional languages.[15]

Furthermore, with an increase in the use of ICT tools, there have been rising concerns regarding how ed-tech software use students' data: Are appropriate notification and disclosure being made to parents? Is sensitive data of students properly protected? These concerns become pertinent because it is critical to avoid bias, discrimination and ensure privacy for students.

For instance, schools in Delhi have installed CCTV[16] cameras to monitor students for ensuring safety however, these cameras were installed without any policy regarding storage and protection of camera recording, the purpose for which school will use these recordings, provisions for obtaining parents' consent before installing cameras. This points to a lack of sensitivity and knowledge regarding the ethical use of technology. Furthermore, the draft NEP recognises the need for ensuring privacy while implementing the usage of ICT tools[17] however, it does not provide specific guidelines or mechanisms through which it can be achieved.

Recommendations

The assessments above indicate the challenges that emanate from interactions between technology and education. To address these concerns, the aim should be to ensure principles of inclusivity, equity and access within the education sector. It is in this regard, some recommendations are provided:

- Education sector consists of institutions which operate at varied scale with differences in access and infrastructural capacities etc. In this regard, there is a need for on-ground effort from the government, ed-tech companies, and civil society to build ed-tech friendly infrastructure for schools in rural areas through increasing the number of computers, ensuring internet connection, directing more funds into the existing schemes promoting ICT use within education. Additionally, Ed-tech

companies should make the applications more mobile friendly and also try to understand other constraints faced by the people in rural areas through directly engaging with them.

- To address the issues of disproportionate transaction costs of implementation of data protection principles, sector-specific policies and initiatives should be introduced by the government. In this regard, the draft NEP must be revised to ensure harmonious compliance with PDPB without excessive transition costs through avoiding the criterion of one size fits all through factoring in the number of students, kinds of data collected, existing data collection used, infrastructural capacities, the number of teachers, administrative staff in educational institutions. The government should also introduce specific schemes for helping schools to be equipped with computers and software for adequate information management and record-keeping.

- There is a need to build the capacity of educational institutions to implement technology-enabled learning and optimise the ethical use of technology and make teachers and students more accustomed to ICT learning tools. For this, there is a need to develop training modules with the help of civil society organisations, which work on the ground. Workshops should be conducted on these training modules for school administrators and teachers to make the optimum and ethical use of technology and data. Such ethical usage must focus on data collection and protection practices. Efforts are required by schools as well as civil society to make students, parents, and teachers more aware of the privacy and safety concerns that emanate from the increasing use of technology within the education sector. This could be done through a collaboration of civil society and educational institutions to conduct information sessions and seminars.

---

1 Scheme of Samagra Shiksha, http://loksabhaph.nic.in/Questions/QResult15.aspx?qref=7602&lsno=17

2 Ministry of Human Resource Development, Draft Education Policy 2019, https://mhrd.gov.in/nep-new

3 https://www.nasscom.in/knowledge-center/publications/edtech-advent-digital-education

4 DISE Survey, http://udise.in/RuralUrban.htm

5 https://theprint.in/opinion/who-goes-online-to-study-in-covid-times-12-5-homes-of-indian-students-have-internet-access/398636/

6 https://timesofindia.indiatimes.com/home/education/news/creaking-school-infrastructure-hitting-kids-learning/articleshow/63405672.cms

7 Arnab Kundu, "Barriers to Utilizing ICT in Education in India with a Special Focus on Rural Areas," March 16, 2018.

8 Section 38(2)(c) of the Right of Children to Free and Compulsory Education , 2009

[9] Section 3 (13) of PDPB"*data fiduciary*" *means any person, including the State, a company, any juristic entity or any individual who alone or in conjunction with others determines the purpose and means of processing of personal data"*

[10] "sensitive personal data" means such personal data, which may, reveal, be related to, or constitute—(i) financial data; (ii) health data; (iii) official identifier (v) sexual orientation; (vi) biometric data (vii) genetic data; (viii) transgender status; (ix) intersex status; (x) caste or tribe; (xi) religious or political belief or affiliation; or (xii) any other data categorised as sensitive personal data under section 15

[11] Section 5 of PDPB "*Every person processing personal data of a data principal shall process such personal data— (a) in a fair and reasonable manner and ensure the privacy of the data principal; and (b) for the purpose consented to by the data principal or which is incidental to or connected with such purpose, and which the data principal would reasonably expect that such personal data shall be used for, having regard to the purpose, and in the context and circumstances in which the personal data was collected"*

[12] Section 7 of the PDPB

[13] Use of Information and Communication Technology in Secondary Schools, NITI Ayog

[14] ICT Implementation in schools in India, TATA Trusts and IT For Change, March 2018.

[15] Arnab Kundu, "Barriers to Utilizing ICT in Education in India with a Special Focus on Rural Areas," March 16, 2018.

[16] https://www.medianama.com/2019/07/223-dear-delhi-government-cctv-cameras-inside-classrooms-are-a-bad-idea/

[17] Ministry of Human Resource Development, Draft Education Policy 2019, https://mhrd.gov.in/nep-new