Demographic Digital Dividend?

The Covid-19 pandemic led to school closures across the country. Since March 2020, schools were closed, primary schools the longest, for almost two years. Ever since, the use of 'EdTech' (a moniker for digital technologies in education) has become much more common, with many schools and teachers imposing it on students and parents. In this context, we felt a need to publish an issue on EdTech, reviewing this phenomenon from a critical understanding of education and the perspectives of research and practice.

Digital technologies are also referred to as 'new information and communication technologies (ICT). Like earlier ICTs, such as language, script, print, and mass media, digital technologies support our information and communication processes. What is 'new' or distinguishing about them is the processing of information in the 'digital' format. The digital format of information has led to an explosion in its access, creation, storage, and dissemination. Digital networks have made communication, networking, and outreach cheaper and easier. Digital technologies also provide 'interactivity', unlike earlier ICTs.

These features of digital technologies helped teachers use digital technologies to connect with students and parents during school closures caused due to the pandemic. The articles in the issue study projects that have integrated technologies into education, both through online educational programs and the use of devices, software, and content in in-person classes. There are a few articles that point out the harmful possibilities of digital education, including from pedagogical, political as well ethical aspects. In the case of a pilot in Orissa, Dr. Vaijayanti Kurukundi shows that children acquired competencies in Mathematics when they explored "e-content" shared by trained village volunteers on digital tablets. Here, content and approaches designed by experts were carried to community learning centers for volunteers to work with children. Similarly, Dr. Ajita Deshmukh writes how an online course supported students in different locations to try out Chemistry experiments and projects in their homes, using "game-based learning" to enhance student engagement and motivation.

While these papers demonstrate that technology can be useful to support learning, perhaps asking, "Are digital technologies useful?" is as incomplete a question, as asking, "Is a knife useful?" This means additional questions on 'when/how/where' and 'cost/benefit', both absolute and relative, must be raised to make this discussion meaningful.

Programs that declare digital education to be successful from the evidence gathered from a pilot, usually refrain from engaging with this comprehensive assessment. In the case of digital technologies – as these are often expensive, fragile, and prone to failure, requiring frequent renewals – the first parameter would need to be cost implications for universal implementation. That, for instance, would make the Orissa pilot (one tablet per child) impossibly expensive. One can argue for a phased implementation, but given the fragility of the devices, their life would be too short to often allow for replacement on failure. A second parameter would be the opportunity cost of the program. Would the same financial resources be better used for books for the library or keeping toilets functional? While, often, digital technologies have been pushed by administrations onto schools, should not the schools/teachers have a say in deciding if they want to use the same funding for other priorities that they may have? Would this provide an opportunity for teachers to have conversations amongst themselves, with parents and local community members, with teacher-educators and other experts, to discuss what their local contexts most need? Yes, this would take time, but then the investment made with the local buy-in would likely be used well, while digital devices pushed on schools, often languish in their boxes, unopened.

A third parameter would be to explore if the program had several components, what was specifically the impact of technology? In the case of the Orissa pilot, what was the role of the village volunteers? Could the content in the tablets have worked without the volunteers' explanations? Would these volunteers have done better with more preparation even using digital technologies? So, what is the value or benefit one could ascribe to the technology itself (research methods that use control groups may be able to answer this question)?

A fourth question would be, what does the introduction of technology take away/what active harm may be caused? For instance, do young minds get more easily addicted to digital technologies? More prone to manipulation through apps? More vulnerable to theft of data about them, which can be harvested by EdTech companies? How does the vendor lock-in with the use of proprietary technologies affect the public system? The late educator, Neil Postman, argued that every introduction of technology creates winners (who benefit) and losers (who are harmed), and the winners try their best to "convince the losers that they are the winners". Teachers and parents beware!

Apart from the cognitive and technological dangers, we also need to consider the impact on equity. Ms. Kavita Rajeshwari points out that power, network connectivity infrastructure, and device and data affordability were real issues affecting many, obviously more so, the socio-economically marginalized groups. Ms. Garima Rath's paper shows how even a small difference in geography (of just 5 kilometers) can create two different worlds of digital education and provide very different levels of exposure to children. Ms Disha Sharma brings a similar focus on educational inequity, in the higher education space. India reports the highest number of deaths among youth due to suicides, which in most countries is the fourth or later rank as the cause of death. Suicides and mental health issues are therefore part of our 'demographic digital dividend', which policy-makers must address.

The pedagogical aspects of online education are visualized by Vinod as a grave challenge to the classroom as a sacred space of learning and community. He worries, "…. Will teachers

be reduced to consultants or gig workers, and students to consumers?" Amid the University Grants Commission (UGC) declaring online education to being equivalent to in-person education, Ms. Prakriti Bhargava highlights the importance of interaction and intimacy of the physical space in the microcosm of a university. If universities are indeed the crucibles for building a better society by invigorating young minds to visualize and work for better societies, the push for the online can be a dangerous setback to any aspirations India may have of becoming a developed country, let alone the Vishwaguru.

Instead of centralized prescriptions from the UGC on how much the digital needs to be blended with the real, the solution, perhaps, is in building teachers' abilities to engage with technologies, not merely as 'users' but as 'critical participants'. Rajaram Sharma argues, "the issue, you will recognize, is not about technology. It is about what we wish to do with it. Engaging with technology, experiencing it, and exploring how it can be used will enable the teacher to focus on creating the best learning environment". In addition, teachers' 'digital literacy' has to include awareness about the harmful impacts of digital technologies on young minds, amidst the push by EdTech vendors to promote their digital offerings. Ms. Anusha Sharma's article on the new "Artificial Intelligence avatar" of EdTech highlights the dangers of hollowing out education processes and systems, due to inimical dependencies from vendor lock-ins.

Prof. Anusha Ramanathan's article suggests that AI enhances the interactivity quality so much that (by Alan Turing's definition), the responses are "human-like", and moreover, these interactions are used by the "machine to (further) learn". This can help design novel multilingual approaches to language teaching through dynamic language translations, yet the teacher has to be responsible, and have the authority to design and transact.

Such teacher preparation for enabling her to appropriate digital technology is firmly within the teacher education (higher education) space. But higher education itself is in an existentialist crisis as Mr. Binay Kumar Pathak's article points out, with trends (riding on digital technologies) unmistakably indicating a push for globalization, privatization, and commercialization of higher education. This is one area where a failure of "Make in India" program will damage us as a country and society. If instead, we can use digital technologies to provide additional exposure and learning opportunities to teachers and students, without removing valuable interactions, and strengthen public institutions and public education, it would create a higher education system that is relevant to the needs and concerns of our youth and society. For this, teacher-learner agency, institutional autonomy, and systemic responsiveness to socio-political contexts must be the primary drivers of EdTech design in education ◆

Mr Gurumurthy Kasinathan
Guest Editor
(Director, IT for Change)