Technology and Education

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There is no doubt that the future, which is already here, is going to be dominated by technology. Although it seems like the cost of devices is going to limit its use in education and create a deeper digital divide today, that may not be the main problem tomorrow. The global trend is towards reduction if not total eradication of poverty and most individuals will have access to digital devices and services in the not too distant a future. The main problem, according to me, is that the rigid age-grade education system tied to examinations will make a slave out of technology and will not allow full expression of its potential. This is already evident.

Every technological advance in the history of mankind has eventually led to easier and greater spread of knowledge. Although scripts were invented two thousand years ago, it was only in recent times that the idea of universal literacy has emerged. Although the printing press was invented in the mid-fifteenth century, literacy levels in Europe and USA needed a boost from changes in social, economic and political thinking eighteenth century onward to raise literacy levels faster and spread education to near universality. It took over four hundred years for Europe to reach significant literacy rates after the invention of the printing press. In India, the first press was installed in the mid-sixteenth century and four hundred years later the literacy rate was still under 30%. In other words, the potential impact of the printing press was there from day one but it took a lot of other efforts and changes before these impacts could be realized in terms of their contribution to literacy and education.

The case of digital technology is probably similar except that what has to be spread is not literacy but education-knowledge. By the definitions of the nineteenth century we have already reached a point of near 100% literacy all over the world, with the exception of some regions. Digital mobile technology is spreading on top of this but it has not yet begun to realize its potential to impact education. As the pandemic hit and schools closed down, school systems everywhere snatched up digital technology- or was it the other way round? Desperate attempts were made to keep education going using any means to remotely or virtually reach children and parents. But the tragedy is that the whole world was obsessed with teaching the curriculum and worried about how much of the syllabus learning would be lost while schools were closed - even though it is well-known that in most of the developing world, and in the underdeveloped parts of the developed world, children cannot read in spite of having gone to school. The equation of schooling = education and curriculum = knowledge is so unyielding that we lost a huge opportunity to informally or non-formally educate children and their parents.

However, the interesting thing is that most people on earth were locked into their homes and their only window to the world was their phone. Given that between 60 to 90% people in every country have cell phones and 40 to 80% have access to the internet, a lot of informal learning has happened globally which is being ignored. We know, for example, that mothers have learned a great deal about smartphones. Many people have learned cooking from YouTube. It is common experience that when children get to handle digital devices they learn a lot more than their parents expect them to. We have not systematically explored what else people have learned but it is worth investigating. The informal impact of digital technology needs to be paid attention to.

One of the core strengths of digital technology is that it allows non-linear access to information and knowledge. Printing of books and proliferation of newspapers and libraries enabled access to knowledge and information beyond classrooms. Digital technology does exactly that but a hundred thousand times more. Digital technology is nothing if not unlimited access to informal learning and the possibility of lifelong learning.

Human societies have, for thousands of years, learned through a very slow natural process of informal learning. The mechanism of schools and the engine of the industrial revolution created a dominant formal learning mechanism which undermined all informal learning although a huge majority of population acquired their basic skills, information and knowledge informally. Digital technology has created possibilities of fast informal learning individually or in small groups.

Informal learning has its weaknesses and problems. But it can be turned into local processes of non-formal and lifelong learning to give it some structure.

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In a country such as India, most people learn on the job. Only half the population of India's 1.3 billion people forms the workforce. Out of this workforce 94% work in the unorganized sector. They are engaged in agriculture, are self-employed, work in small stores, handicrafts, trade and other unlicensed activities. Undoubtedly, they need to be educated but do they need the kind of 12 year curriculum that keeps them locked up without any serious gains? The National Education Policy 2020 has dealt with some issues of the rigidity of the curriculum and the system. Converting the on-the-job learning or learning while earning into non-formal certification needs to be done with some imagination.

The digital era can make information and knowledge freely available without barriers. But, over the last couple of hundred years, barriers around educational institutions have grown. This makes these old institutions outdated. Of course, primary education is cost-free and accessible to any child. But at higher ages, there is an increase in both the number and type of barriers that children and young people face. For instance, if a student has not attended a recognized institution, they cannot acquire a certificate. How does this make sense in a country where most people learn their skills and get their knowledge outside institutions?

The framework for India's vocational training program has a provision for "recognition of prior learning". A plumber who has learned on the job, can be assessed and certified for his skills without having attended an institution. This is possible for every skill and job barring a few. Digital technology makes it possible to create non-formal courses in different subjects, as well as robust local assessment mechanisms. Encouraging those who are left out of formal education to learn through non-formal mechanisms is a major strength of the new digital technology.

Digital technology will be grabbed by the formal education system for classroom teaching-learning, but its real utility and strength lies outside the system, whether in the informal sector or the business sector.