

Technology can assist but our mindsets have to change

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The Annual Status of Education Report was born to measure the impact of governmental spending on various aspects of elementary education in India following the UPA government's decision to levy an education cess in 2004. Over the years we have reported on the status of enrollment, learning and other aspects of education of different age groups of children, particularly after the 10th year of ASER. Although the initial intent was to observe the impact of government actions and spending, as the attention turned to other age groups and as circumstances began to change, our measurements began to tell us something about the impact of changed circumstances. This was particularly true after the pandemic when several observations stood out. One was the lowered learning levels or learning loss and another was the exodus of large proportions of children from private schools to government schools. But the most prominent change measured was the increase in the proportion of households that owned smartphones, from 36% in 2018 to 74% in 2022.

The story of widening access to smartphones seems to continue. Although data from the ASER 2023 survey are not strictly comparable to the 2022 numbers, about 89% youth, males and females, surveyed around the country have said they have a smartphone at home and 92% have said that they can use a smartphone. This should be considered a big jump in access to smartphones. Also it appears that males and females in the 14-18 age group have practically equal access to smartphones at home.

This is a big change but what does this access mean in terms of education or learning?

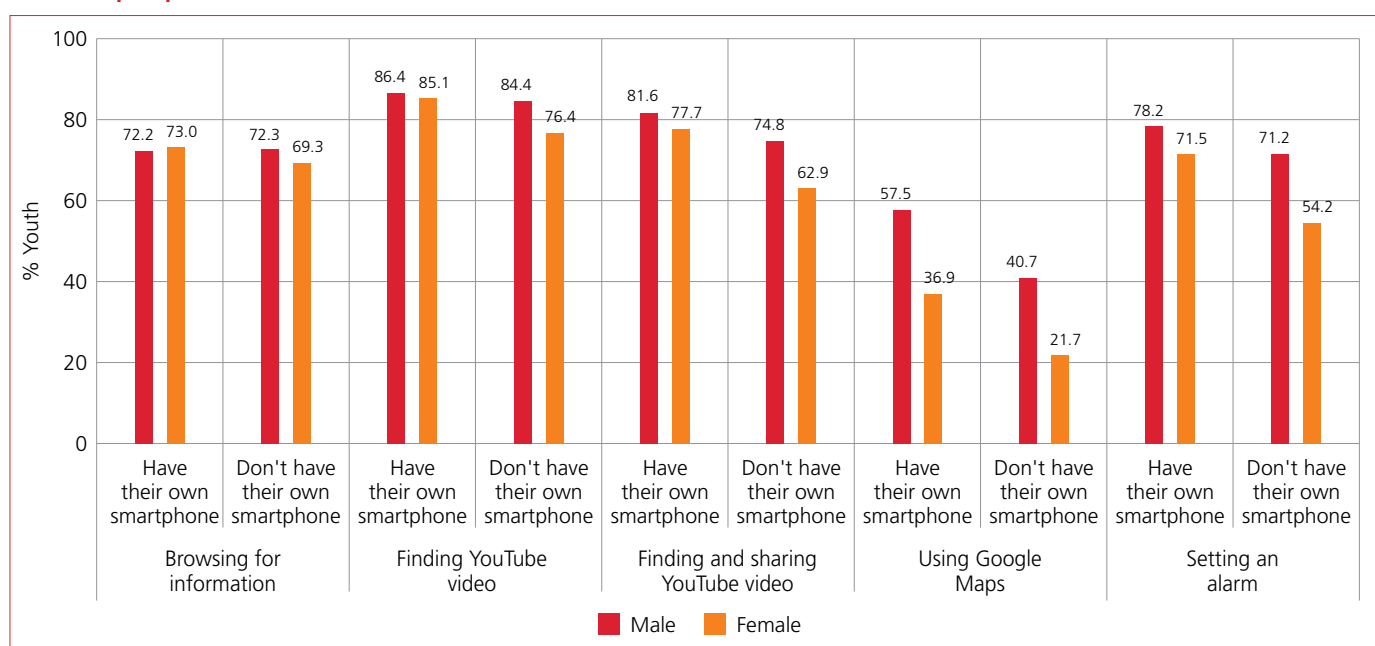
First of all, about 90% surveyed households have smartphones and out of the surveyed youth 94.7% males and 89.8% females could use the smartphone. Out of the males who knew how to use smartphones, a little less than half, or 43.7%, owned a smartphone. Among females, only 19.8% out of those who knew how to use a smartphone owned one. Table 1 shows the obvious discrimination in ownership of smartphones right from age 14.

The gender-based difference in ownership of devices affects some abilities and in other cases there is not much of a difference. Chart 1 illustrates effect of ownership of smartphones on the ability of the youth to perform some tasks in front of the surveyor.

Table 1: Of those who can use a smartphone, % who have their own smartphone, by age & sex

Age	Male	Female	All
14	15.5	7.0	11.0
15	26.1	10.7	18.2
16	45.3	17.3	30.5
17	65.4	29.4	46.6
18	79.9	40.6	58.6
All youth	43.7	19.8	31.1

Chart 1: Of those who could bring a smartphone to do digital tasks, % youth who could do the tasks correctly, by sex and ownership of phone



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Browse for information: As long as they have access to devices at home, ownership makes no difference in the ability to perform this task among males. Females who own their phones do as well as males in looking for information. Females who do not own their phones are only at a small disadvantage when compared with females who own the device. The self-reported information about using phones for education shows no gender bias. That is not surprising since it falls under this category of browsing for information.

Find a YouTube video: This too falls under the category of browsing. In fact, more youth are able to find videos on YouTube and this ability is about the same among males who own or do not own their phones. Females who own smartphones are almost equal to males in looking for YouTube videos. However, as compared to this, among females who do not own their phones, 10 percent fewer females can perform this task.

Find a YouTube video and share it: The difference in ability to find and share YouTube videos among males and females who own their phones is very small – about 5 percentage points. However, about 15 percentage points more females who own smartphones can find and share a YouTube video than females who have access to a phone at home but do not own it.

Setting an alarm: Owning the phone makes a difference in the ability to set an alarm for both males and females but the difference in the ability is more among females than males.

Using Google Maps: The proportion of youth overall who could perform this task is much lower among both males and females than the other performed tasks. This makes sense since the ability to use Google Maps is more dependent on ownership than in the other tasks. This is related to age, which in turn is correlated with mobility and the percentage of youth who own phones.

Although over 90% surveyed individuals reported using social media in the reference week, the proportion of those who could use the safety features was largely dependent on ownership.

In short, while access to a common smartphone can be described as basic or superficial, owning a smart device is necessary for a deeper access to information and services.

Smartphone skills, like all other skills, need motivation combined with opportunities to learn. Entertainment is a great motivator – almost universal. Products such as WhatsApp and YouTube have clearly motivated and helped youngsters to learn to use the new technology without a gender bias. However, in cases of certain online services and commercial activities, females seem to participate less than males. This may have less to do with barriers of technology and more with social obstacles.

Once technology, any technology, is in the hands of motivated users without constraints, they learn to use it. Motivation to use and learn new technology came during the pandemic. Without being taught, a huge population adopted the new technology and its applications that were useful and user-friendly. But, even before the big push of the pandemic, we saw an example of how children pick up skills without being taught.

In 2017, small groups of 11- to 14-year-olds were given one tablet to share. Their mothers were given the responsibility of safe-keeping with the assurance that there would be no penalty for loss or damage. Nearly 3,000 tablets were distributed in about 400 villages in three states of Maharashtra, Uttar Pradesh and Rajasthan. Each tablet had a password to ensure that no external content was imported, but we could access data gathered in the device. Within two weeks of the distribution we discovered that passwords in half the tablets spread over villages in all three states had been changed and the children were having a laugh at the Pratham staff. In those days it was unlikely that the children had exposure to devices such as tablets and smartphones in the village. But obviously some people knew how to handle the tablet and the knowhow spread like wildfire motivated by the opportunity to play mischief. The interesting question was, why didn't all groups change the password? Needless to say, we removed passwords in all the tablets and from then on the groups of children were made responsible for protection of the content. Not surprisingly, that worked very well although mistakes were made every now and then.

In the above experiment, common ownership of the tablet was with the children by rotation and they were free to play with the device. Somewhat similar to the Hole in the Wall project of Professor Sugata Mitra, children learned on their own and from each other. Pratham staff helped. There were different phases of this experiment including one where children started shooting, editing, sharing and uploading their own videos. In one phase the proportion of female group leaders among 4,394 leaders was 49%. Girls use the devices equally and equally well as the boys in rural settings when they are given equal and unfettered access to the devices. In contrast, when their access is constrained, their learning also is likely to be affected negatively.

Males owning a smartphone in this age group, as the survey has found, are a little over twice the number of females at every age. Looking at all the data presented by ASER 2023, the reduced capacity of females to perform several tasks like

accessing services, or making payments, or being safe on the internet is strongly related to the constraint in using the devices due to absence of ownership. As in the case of every freedom, there is a risk and an opportunity.

Widespread smartphone ownership combined with cheap data presents a huge challenge because of risks of distortion of information. But it is also a huge opportunity for education of the kind that is not offered in schools and colleges. For example: there is a great need for sexual and reproductive health education that can be made available to males and females through ICDS and Primary Health Center channels.

Agriculture, or broadly Natural Resource Management, is another subject that is not offered in rural schools and colleges, at least not on the scale it should be. The ASER 2023 survey found that while 56.4% and 31.3% rural students respectively were studying Humanities and Science beyond Std X, only 0.7% students reported that they were studying agriculture. Agriculture employs over 50% of India's workforce and nearly a quarter of all adolescents in the 14-18 age group also work on agriculture while being enrolled in schools or colleges. In this context the need to formally train our children and youth in advanced skills and knowledge of agriculture, fisheries, forestry, etc. that are traditionally handed down in families should be obvious. This is not a matter of skilling for jobs or livelihoods alone.

Issues of natural resource management are the issues of environment and climate. They have always been interconnected. The difference now is that there is a growing awareness about the linkages. Therefore, there is all the more reason now that not only agricultural communities but the entire population should learn about agriculture and the environment. Each home has a laboratory around it for experimentation and learning. Knowledge and information can be accessed using digital technology wherever people are. So, the way to do it probably is not through rigid structures of classrooms, departments and universities run by governments or for-profit private players although these will continue to thrive for much of the foreseeable future.

The need for many more universities in India is much talked about. This is directly linked to the population that is going to keep on growing for the next forty years or so. But there is also a need for non-formal education that can supplement the formal processes of education or fulfill other needs.

Two decades ago, there was much hope that computers with the Internet will revolutionize education. A decade later mobile technology led to the belief that education anytime anywhere was possible. From one laptop per child we started thinking of mobile devices replacing books. Now we are about to reach the situation of a mobile phone in every home. According to self-declared information in ASER 2023, almost half the population surveyed has used mobile phones for their studies. Although this is a large proportion, it is smaller than the population using smartphones for watching YouTube videos. There are many products in the market from for-profit and not-for-profit companies available for education but they are generally focused on preparing for examinations. Now AI-based tutoring programs are growing. As the technology advances rapidly, such programs available in local languages will be easily possible. There is reason to believe that costs will keep falling. But their focus is still preparation for exams because that is what the market demands.

Technology barriers to availability of knowledge are falling but the transfer of this knowledge and certification is still a restricted process. These processes need to be opened up.

The idea of education anytime anywhere is now being put to the test. Universal elementary school enrollment has been achieved in India and we are on our way to achieve universal secondary and higher secondary enrollment. But, as this report points out, half of the adolescents start working part time after completing Std X or the age of 15-16. Although the education policy talks about greater flexibility in entering and re-entering the formal education process, the need really is for the underprivileged to be able to study while working to earn a living. Open schooling and digital technology is a powerful combination that is growing. The open school and open university processes need to be decentralised and strengthened. Rapidly developing technology is going to make it easy not only to teach and learn anywhere-anytime but testing anytime anywhere should be possible as well.

This is the century of abundance. Wealth in different forms is becoming so abundant that the likes of Elon Musk are now talking about "universal high income". A lesser known venture capitalist and technology serial entrepreneur, Kai-Fu Lee has been reflecting on our purpose on Earth as being creative in the age of artificial intelligence. The idea of universal basic income was born over half a millennium ago and has been around in different forms. We are reaching a point in history where there will be a lot of work but fewer jobs that will pay for the work done. Those who talk about universal basic or high income are also worried that if people earn without "jobs", they may lose a sense of purpose in life.

Our education system has grown to train students to aim at one purpose in life. To do well in examinations and get jobs. Times are changing. Doing well in examinations and getting jobs will continue to be a goal for a good proportion of youth but life goals that are not connected with academics are also becoming popular. Our system has to evolve to support those goals. Technology can assist but our mindsets have to change.