

# Smart phones as educational tools: A reality check from rural India

by K Vijayanti | Aug 8, 2018



Photo by Parasher Baruah

The buzz about the great Indian digital revolution notwithstanding, a November 2017 survey in rural Karnataka indicates that while 49% of adults own a mobile phone, just 11% of these are smart phones. Twenty-five percent of children have access to smart phones, and of them, only 18% use the smart phone as an educational tool. The study offers a reality check on the access and use of smart phones in rural households, and the potential for use of smart phones in education at present.

The evidence of the impact of smart phones on education is mixed. A study by the London School of Economics (Beland and Murphy 2015) suggests that the use of the phone could increase inequality in learning outcomes. On the other hand, some technology experts predict a transformation, saying that in the next five years, smart phones will become the number-one educational support for students. An analysis of empirical research (Yao-Ting Sung et al 2016) on the use of mobile devices revealed that the overall effect of using mobile devices as a tool in education is better than using desktop computers.

According to TRAI (Telecom Regulatory Authority of India) data, tele-density in rural India is growing at a much faster rate than in urban India. At the end of 2016, there were 469 million rural connections, most of them wireless, compared to 4 million landline phone users. Statistics<sup>[1]</sup> on digital penetration in India show that three out of four adults have a mobile phone; around 300 million have smart phones.

There is no data, however, on the number of smart phones in rural India, making it difficult to predict the number of those with access to mobile phones capable of computing and internet access. There is little information also on rural children's access to digital devices or their patterns of use, making it difficult to predict the potential for digital education in rural India.

Akshara Foundation's household survey on access, use and perceptions of smart phones amongst households in rural Karnataka addresses some of these gaps in data. The research was conducted preparatory to launching Akshara's digital mathematics learning app that takes learning to the home.

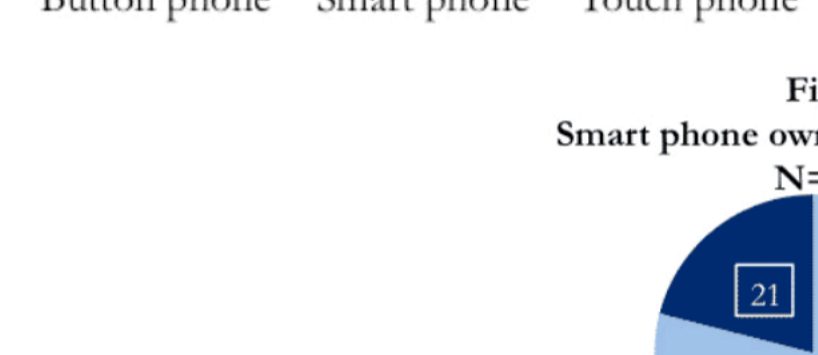
The survey was conducted in November 2017 to find out (1) household access to any form of digital communication device (mobile or smart phones), (2) who in the household owns this device and is it accessible to school-going children? (3) pattern of use by age, sex and other parameters, and (4) beliefs of parents/device owners regarding digital access for children.

The study followed a sample survey method, surveying all households in the selected villages. Four villages were selected, representing the four administrative divisions of Karnataka state. The villages selected represent both developed and backward talukas as listed in the revised Nanjundappa Committee report on regional imbalances.<sup>[2]</sup> The villages were Taverekere in Hoskote, a developed taluka in Bengaluru rural district in Bengaluru division, Maddur in Yelandur, a developed taluka in Chamrajnagara district in Mysore division, Kadampur in Mundargi, a backward taluka in Gadag district falling under Belgaum division, and Kabbargi in Kushtagi, a backward taluka in Kalburgi division. Kabbargi was also selected because it is a village with the second-highest number of households in the taluka (Census 2011).

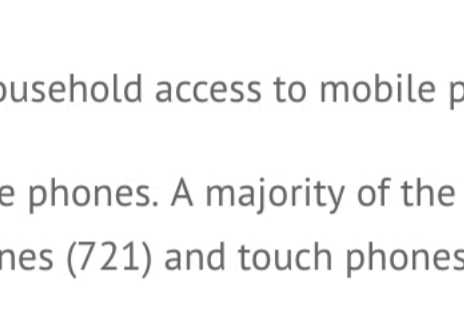
The survey covered 9,370 persons in 1,957 households, 62% adults (6,752) and 28% children below 16 years (2,618). The socioeconomic context of the households provided a broad picture of the communities that had access to digital devices, their patterns of use and perceptions of digital tools. Of the surveyed households, 98% were Hindus, around 1% Muslims, and a few Christians. Nearly 78% of the households belonged to Scheduled Castes, Scheduled Tribes and Other Backward Classes. Around 94% of these households spoke Kannada, 4% Telugu, and 1% Urdu. Interestingly, the economic profile reveals that 91% of the families owned their houses, with a majority dwelling in unfinished or semi-finished houses. Less than 1% owned a car, around 30% had two-wheelers, and 44% did not own any vehicle. Seventy-three percent of the households owned a television, and 95% had cable connectivity. Around 64% reported owning no land and 19% said they had less than an acre of land. The average income of the households was roughly Rs 14,000 per month, with monthly expenditure around Rs 9,000. The average annual household income of the majority of the population was in the range of Rs 150,000 to Rs 200,000.

## Access and use of digital devices

**Fig-1**  
Digital penetration in rural Karnataka  
N=6752 Adults



**Fig-2**  
Smart phone ownership by gender  
N=721

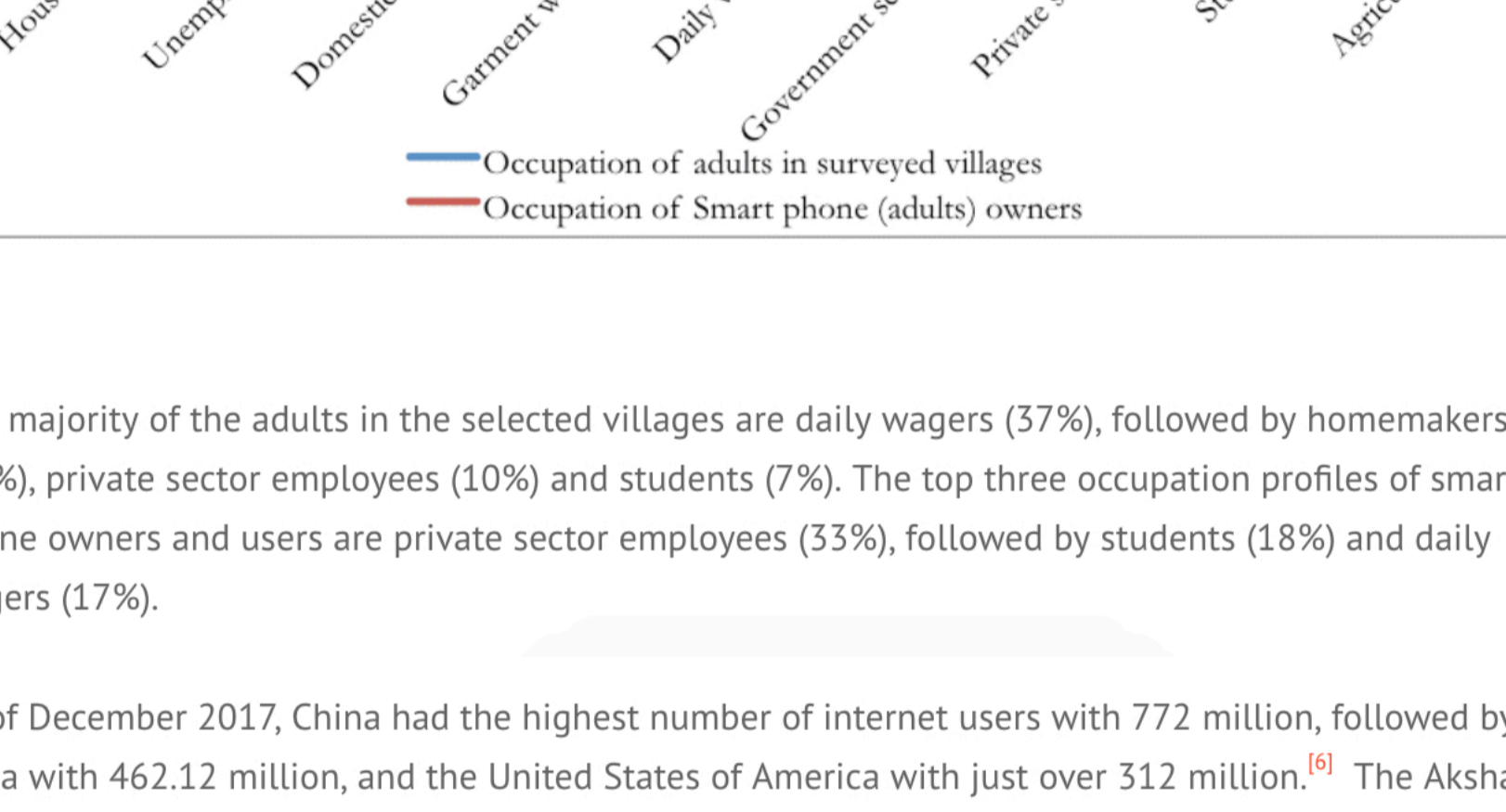


Our survey collected information on household access to mobile phones, particularly smart phones.

Of the 6,752 adults, 49% owned mobile phones. A majority of the mobile phone owners owned button phones (2,393), followed by smart phones (721) and touch phones (215).<sup>[3]</sup>

Contrary to most optimistic claims on access,<sup>[4]</sup> we found (Fig 1) that smart phone penetration in rural Karnataka is as low as 11%. The disaggregated data by developmental indicators of the talukas shows that penetration in the most backward talukas is further down by 4 percentage points.<sup>[5]</sup> In other words, one out of every two adults has a mobile phone, but only one in 10 adults has a smart phone in rural Karnataka. Eleven percent smart phone ownership in the selected villages indicates poor access to the digital tool.

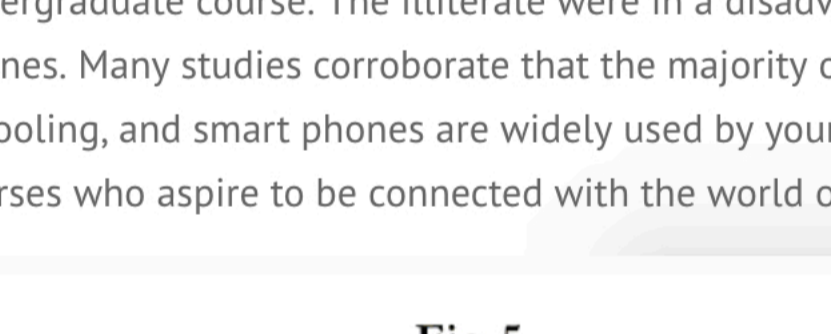
**Fig-3: Occupation (in %)**  
N=1957



The majority of the adults in the selected villages are daily wagers (37%), followed by homemakers (27%), private sector employees (10%) and students (7%). The top three occupation profiles of smart phone owners and users are private sector employees (33%), followed by students (18%) and daily wagers (17%).

As of December 2017, China had the highest number of internet users with 772 million, followed by India with 462.12 million, and the United States of America with just over 312 million.<sup>[6]</sup> The Akshara survey found that 79% of the smart phone owners are men, and that women in rural Karnataka have lower access to smart phones.

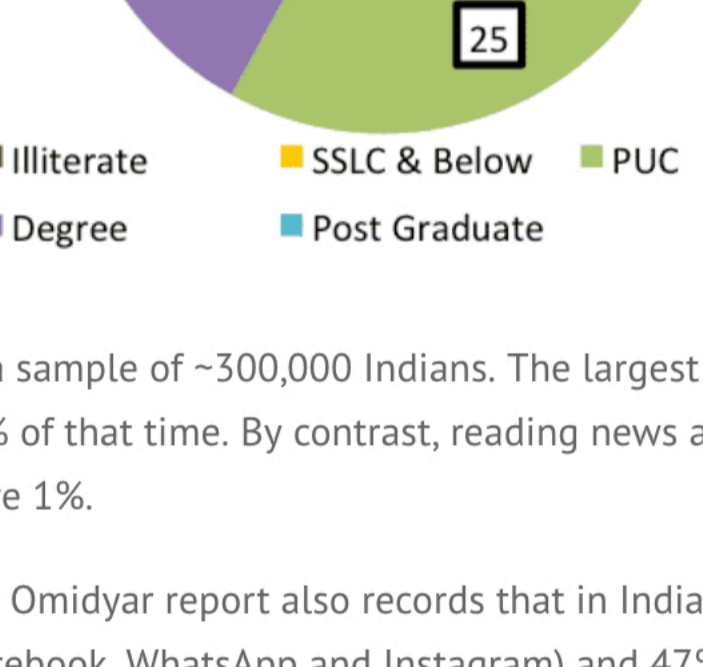
**Fig-4**  
Smart phone access & users by age (in %) N-721



Smart phone access across different age brackets (Fig 4) in our survey shows that a majority (52%) of adult smart phone owners/users are in the 21-30 age-group. Penetration declines sharply in the higher age-groups.

It is interesting to note that education is closely correlated with smart phone ownership: 29% of the smart phone users in the survey had either cleared the secondary school examination, or dropped out just before that, while 25% had either completed pre-university or were currently enrolled in the course, and 26% were graduates or enrolled in an undergraduate course. The illiterate were in a disadvantaged position as only 3% of them had smart phones. Many studies corroborate that the majority of smart phone users have some sort of formal schooling, and smart phones are widely used by young adults studying in pre-university or graduation courses who aspire to be connected with the world outside (Fig 5).

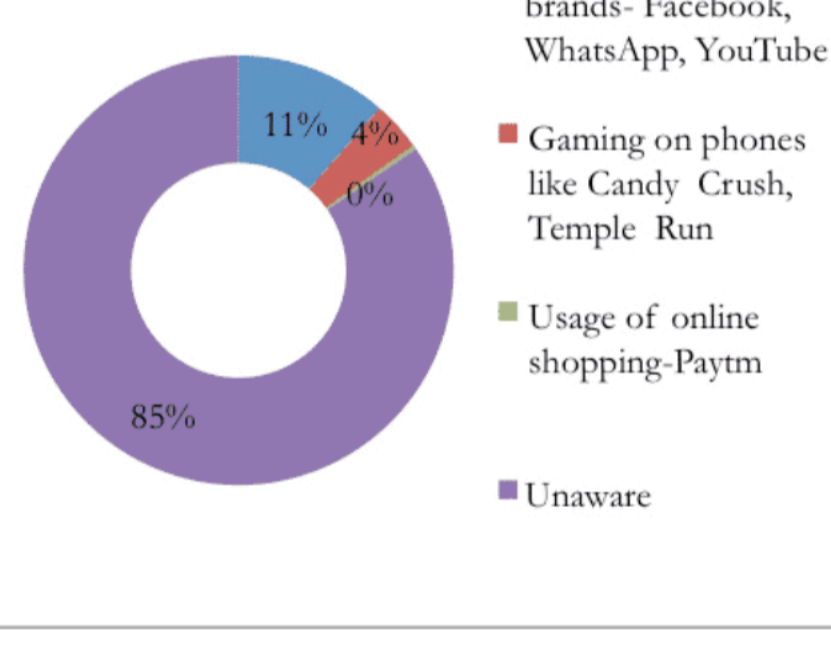
**Fig-5**  
User profile by education (in %) N-721



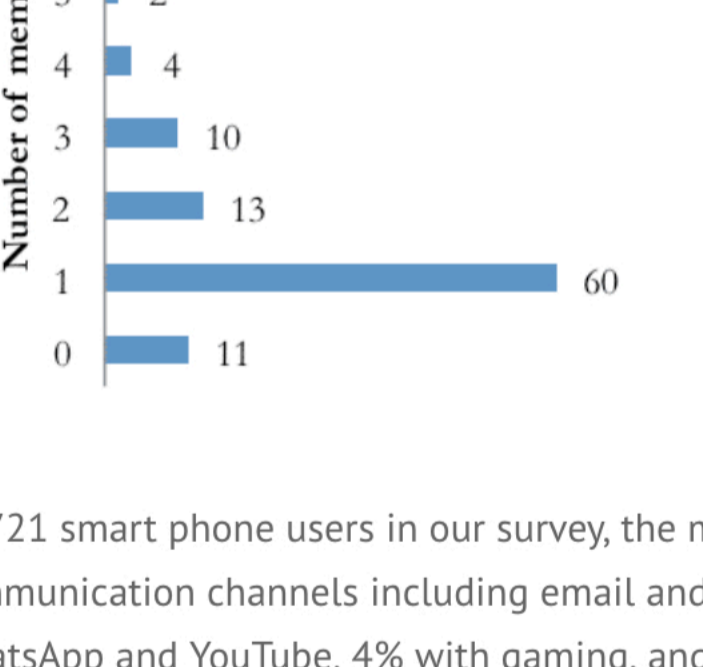
About 41% of the smart phone users subscribed to a monthly talk-time plan, 59% subscribed to both talk-time and an internet package, and around 30% were recharging for an amount of Rs 399 every month. The majority of smart phone users used their device for communication and most of the internet users seemed to be using it because of a cost-effective plan from their service provider.

The Omidyar report also records that in India, 95% of app usage is within the Facebook family (Facebook, WhatsApp and Instagram) and 47% use YouTube for social and entertainment purposes.

**Fig-6: Use of smart phones by adults**



**Fig-7**  
Smart phone sharing (%)



Of 721 smart phone users in our survey, the majority (85%) were unfamiliar with internet communication channels including email and Skype, while only 11% were familiar with Facebook, WhatsApp and YouTube, 4% with gaming, and less than 1% with online shopping. We found that 60% of the smart phone owners shared the phone with at least one other household member. Around 20-30% of the respondents said they shared their phone with at most one user, while 11% said they were single users.

## Children's exposure to smart phones

Many studies (Tandon et al 2011) indicate that children's exposure to screen time has been increasing over the years. In some cases, children are exposed to as much as four hours of screen time on weekdays. However, our survey found that only 25% or 652 of 2,618 children had access to smart phones. Of the 652 children who had such access, a majority reported that they had used the device for gaming. Games like *Jalebi*, *Temple Run* and *Candy Crush* are popular among them.

**Fig-8**  
Activities for which children use smart phones  
N=652



On an average, a child was found accessing the smart phone for 30 minutes a day, with maximum use in the evening or night.

About 67% of the children with smart phone access used them for games, 11% for entertainment (watching videos and songs), 18% for education, and 4% for browsing to get information.

Interestingly, some parents had installed learning apps for their children and the children were making use of them.

Thus, children in rural areas seem to be more attracted to the entertainment aspect of their digital devices. It was found that children who were using the smart phone for education and browsing went to private schools and were 12 years or older.

## Perceptions of parents on exposing children to the digital world

The survey found that 33% of the parents strongly agreed that children must be exposed to technology like computers, mobile phones and the internet, and that around 61% agreed with this. It is interesting to note that none of the rural parents had reservations about their children being exposed to digital technology and around half of them actually felt that time spent on digital devices is useful for their growth. However, more than 90% of the parents felt that the use of digital devices by their children needs parental supervision, and those who are allowing access to their children at present do keep them under observation when they are engaged with the tool.

## Conclusions

Contrary to the general perception of the great Indian digital revolution then, the Akshara survey reveals that only 49% of adults own personal mobile phones in the selected villages, and only one in 10 respondents owned a smart phone. These numbers are much lower for women. Entertainment and communication continue to be the dominant purposes of smart phone use. Only 25% of children surveyed had access to smart phones (an average of 30 minutes a day) but the majority used the smart phone for games, videos and songs. Only one-fifth of the children with access to smart phones reported using them for education.

While wireless networks have undoubtedly provided access to many rural inhabitants, this research reveals that penetration of digital devices remains a challenge in rural areas, where economic factors govern access and affordability. Added to this is the challenge of how to convert consumption from entertainment to merit goods like education. Thus, while digital learning tools could aid the teaching-learning process for some, they could also introduce a new layer of inequality in education for the digitally excluded. Technology's functionality is not in question here, but its practical application for all may be some way away.

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## References

Beland, Louis-Philippe and Richard Murphy (2015): "Ill Communication: Technology, Distraction and Student Performance," CEP Discussion Paper No 1350, Centre for Economic Performance.

Kudva, Roopa et al (2017): *Innovating for the Next Half Billion*, Omidyar Network.

Tandon, Pooja S et al (2011): "Preschoolers' Total Daily Screen Time at Home and by Type of Childcare," *Journal of Pediatrics*, Vol 158, No 2, pp 297-300.

Yao-Ting Sung et al (2016): "The Effects of Integrating Mobile Devices with Teaching and Learning on Students' Learning Performance: A Meta-analysis and Research synthesis," *Computers & Education*, Volume 94, pp 252-275.

## Endnotes

- <https://www.statista.com/topics/2157/internet-usage-in-india/>
- The Nanjundappa Committee used 35 indicators from five different sectors: (a) agriculture and allied, (b) industry, trade and finance, (c) infrastructure (economic), (d) infrastructure (social), and (e) population characteristics, to categorise the blocks or talukas into backward and developed regions. The description in the paper gives the position of the regions across two time periods (2000 and 2010). The committee made the 2000 estimate and the 2010 estimate was made by Hanagodimath by following the committee's method. The decadal change gives a vivid picture of the areas that underwent the change. According to the committee's comprehensive composite development index (CCDI), each region (block/taluka) has been categorised under four sections: (a) developed, (b) backward, (c) more backward, and (d) most backward, using the 35 indicators.
- A smart phone functions on an operating system and lets you do the work of a computer. Smart phones are powered by operating systems such as Android, iOS and Windows Mobile. The touch phone is any phone that has an electronic visual display that allows users to access features by touching them with fingers or a stylus. Button phones are the old-generation feature phones largely confined to call and text functions.
- There is a popular perception that a majority of Indians have access to smart phones.
- Of the 11% of smart phone users overall, users in developed districts accounted for 7%, and users from most backward districts for 4%.
- <https://www.statista.com/statistics/262966/number-of-internet-users-in-selected-countries/>