

# ICT Usage in 1000 Schools of India

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One of the major objectives of the study was to show the relationship between technology use and changes in teaching and learning process, as well as educational curricular improvements.

In view of the large size of the country and the fact that the number of primary and secondary schools run into hundreds of thousands, two representative States were selected – Gujarat in Western India and Karnataka in South India. Again two Districts in two different areas of the States were selected for the Pilot project. Schools in the capital cities of the two States were also surveyed to reflect the different stages of development in the use of ICT in teaching and learning.

The survey used multistage random sampling and the sample unit was the school. This methodology produced the following sample size:

- Number of schools : 1000.
- Number of teachers : 6239.
- Number of students : 35,547.

The survey took place in the early part of 2004. Out of the 1,000 schools surveyed, 500 each were in the States of Gujarat in the West and Karnataka in the South of the Country. Out of these 500 schools, 200 each were in the Districts of Patan and Surendranagar in Gujarat and Bellary and Mandya in Karnataka. 100 schools each were also assessed in the capital cities of Ahmedabad in Gujarat and Bangalore in Karnataka. In Gujarat the ratio of the number of urban schools to rural ones was 26:65.8 and in Karnataka it was 37.6:53.6.

A majority of the schools surveyed in both the States were Government or Public Schools. Out of the 1,000 schools, 602 (60.2%) were Government Schools and 398 (39.8%) were Private Schools. Out of the total 1,000 schools 49.7% were primary and 51.3% were secondary. The total number of students enrolled in these 1,000 schools were 2,24,018. Out of these 1,21,029 were in Gujarat and 1,02,989 were in Karnataka.

## Observations and Recommendations

1. The first major finding of the survey is that the use of ICT in Education

*Though computers came to Indian classrooms in the year 1984-85, the level of adoption of modern technology in the teaching and learning process has been limited and uneven. Possibly there has been no comprehensive study or survey on the use of Information and Communication Technology (ICT) in schools in India. This study is an attempt not only to provide a snapshot of the situation on the ground but also for providing a road map. The report was prepared by Vivek Bharadwaj (vivekbharadwaj@hotmail.com), now the Special Secretary, Department of IT, Government of West Bengal, who was serving as a Director, Ministry of HRD while undertaking the study.*

is very limited in the country whether measured by the number of schools having an ICT Department or Unit (20.4%), the availability of a budget in schools for its implementation (6.5%), the number of teachers trained at ICT, the per capital availability of hardware and so on and so forth.

2. The access to ICT facilities whether by students or by teachers was of great concern. In the 200 schools surveyed in Surendranagar there were only two Multi-media Projectors, three PDAs and four Scanners. Even in Ahmedabad there were only 589 Desktop Computers reported in 100 schools. This means less than six computers per school and one computer for 72 students on an average. There is thus a great need for increasing the availability of various ICT tools.
3. While there is a relatively better availability of older technologies like the TVs or RCPs, newer technological products like Multi-media Projectors, Laptops and PDAs, which make learning more student-centric, were scarce. In the 200 schools in Mandya, for example there was not a single Multi-media Projector, LCD Projector, Scanner or a PDA. The survey found that the abundance of different technologies was directly related to their vintage. Older equipment like TVs, RCPs and Desktop Computers were more abundant than Multi-media Projectors and Hand-held Computers.
4. As the increased availability of these technologies in the country

would take time, it would be a sensible strategy to concentrate on utilising traditional media like the radio and the television. These technologies also have an edge over Desktops or Laptops as more students can utilize them at any given time. As mentioned earlier, in Gujarat schools it was the TV and then the RCPs, which were available in maximum numbers.

5. The hypothesis that even where ICT tools were available there was low level of integration in education was validated as both Principals and teachers stated that ICT tools were most used for teaching ICT as a subject. In Gujarat, teachers stated that ICT was used most for teaching computers as a subject and then for sciences. In Karnataka, computer classes were the second most important subject for which ICT was used. There was little utilization of these tools in Social Science and Music in Gujarat and in Music and Art in Karnataka. Principals reported that they were used least for teaching the local language. The maximum percentage of respondents who stated that one subject for which computers were always used was ICT – both in Gujarat (8.2%) and in Karnataka (11.8%).
6. The lack of Internet connectivity came-up starkly and repeatedly during the survey. This had its own impact on the various uses to which ICT could be put to by both the teachers and students. Only 8.6% of the teachers in Gujarat and 8.8% of the teachers in Karnataka had



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access to the Internet, whether at school or outside.

As far as students were concerned, only 4.2% students stated that they had access to the Internet in Gujarat. This number was 12.8% in Karnataka. In Gujarat 79% of the students surveyed could not e-Mail and 78.3% could not browse. In Karnataka an even larger percentage (87.3%) could not e-Mail and 89.5% could not browse. The frequency of use of Internet for surfing websites in schools, for example were instructive. 55.4%



of the students surveyed in Gujarat stated that they had never surfed the Internet. The proportion of students who surfed the Net daily was 0.1%.

There was only a marginal difference in the usage of ICT tools when assessed according to the type of school-Private or Government-that the student attended. In Gujarat Private School students used ICT marginally more than Government School students for all purposes except for communication. In Karnataka Private Schools used ICT marginally more than Government Schools for communication, creation and functional purposes. Government School students used ICT more to find, acquire and use information.

7. While a relatively larger number of schools had an ICT Department or Unit a much lesser number had an ICT Coordinator to make the entire process effective. The number of

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schools which had an ICT Master Plan in place was even less. 20.4% of the total number of schools surveyed had an ICT Department or Unit. It is well known that without trained personnel the hardware is of little use. It was found that only 13.7% of the schools had an ICT Coordinator which was as mentioned earlier less than

8. There has been steady but slow progress in the availability of ICT facilities for students in the country. An assessment of the length of time that computers had been with schools was made during the course of the survey. It was found that only a miniscule percentage of schools had computers 8 years back. These were also more noticeable in the urban areas which clearly points to the fact that computers first became accessible in towns. The maximum percentage of schools in Gujarat have acquired computers in the last

1-2 years while it was 2-4 years for Karnataka. The case of rural Karnataka is instructive. While 8 years back there was no computers in any school, now about 18% have computers and the maximum number of computers were acquired in the last 2-4 years.

9. A possible lack of communication in propagating the components of the ICT policy framework to the schools was discerned. Less than 30% of the schools in Gujarat claimed to be implementing the regional policy on ICT. Surprisingly many more Private Schools claimed the same than Government Schools!

The focus of implementation of the Policy on ICT in Education differed in the two States. While in Gujarat the emphasis seemed to be on training teachers on ICT and then on using ICT in the management and administration of the school, in Karnataka using ICT for teaching specific subjects was most important and then was the training of teachers.

10. An assessment was made of the level of expertise in the use of various software tools and applications. These ranged from simple ones like Word Processing, Power Point, Internet Browsing to Programme and Project Management. Teachers from Gujarat consistently reported better expertise at these applications than those from Karnataka. Interestingly, however teachers from both the States were best at Word Processing and then at Presentation tools. In Gujarat they were least acquainted with Project Management and in Karnataka with web-page designing. In general the level of expertise was quite low. The expertise at even basic activities like E-mailing and Internet Browsing was fairly low primarily because of the lack of Internet

access in schools. The major difference in the level of expertise remained between teachers from Ahmedabad and Surendranagar and those from Bangalore and Mandya. It was found that there was practically no expertise in higher order skills like web-page designing or data base management.

11. Students were questioned on the level of expertise acquired by them in using ICT tools. These skills were divided into basic, intermediate and advanced. Less than 20% students surveyed in Gujarat assessed themselves as excellent or very good in the basic use of ICT tools. Only word processing got more than 20% responses. The situation was worse in Karnataka where in general only 5-10% assessed themselves excellent or very good at these simple skills. Again, only word processing was relatively better. As stated earlier, there was in general low level of expertise. The conclusion that ICT tools are mostly being used for making presentation or documents but not for developing critical thinking is inescapable.
12. The declining levels of community participation in education came out clearly during the survey in both the urban and rural areas of the two States surveyed. ICT tools were least used for communicating with parents!
13. The location of computers is an important determinant of access to technology by the students. If Desktops are confined to the office or TVs to the residence of the Principal, these technologies would have no impact on the teaching-learning process. An assessment was made of the location of computers in schools. In Gujarat, location of computers in classrooms and in a computer laboratory was evenly distributed. In Karnataka computers were pre-dominantly located in Laboratories. Some were housed in the library also. The maximum number of computers in laboratories were in Bangalore. None of the respondents ticked both classroom and the laboratory as the location of computers in Gujarat.



14. Students were also queried during the survey whether they possessed mobile phones, hand-held/PDA, E-mail addresses or a personal website/web-page. 5.9% of the total number of students surveyed in Gujarat had a mobile phone. This figure reached a high of 14.1% in Ahmedabad. Karnataka students had the maximum number of E-mail addresses. The district of Mandya in Karnataka surprisingly had the maximum number of E-mail addresses!
15. There was only a marginal difference in the usage of ICT tools when assessed according to the type of school-Private or Government-that the student attended. In Gujarat Private School students used ICT marginally more than Government School students for all purposes except for communication. In Karnataka Private Schools used ICT marginally more than Government Schools for communication, creation and functional purposes. Government School students used ICT more to find, acquire and use information. While Private School students in Gujarat had 4 times more access to the Internet compared to their Government School peers, it was the reverse in Karnataka where 16.6% of Government School students had access to the Internet compared to 5.6% Private School students. Surprisingly, the percentage of

students who used e-Mails as a means of communication was marginally better in Government Schools in Gujarat and a little better for Government Schools in Karnataka.

Access of Government School students to ICT tools outside school was in general low. The access of Private School students to such devices was comparably better and pre-dominantly at home which implied a better socio-economic condition. This was true for both Gujarat and Karnataka.

The data was compared between Government and Private Schools to assess the effectiveness of the different school systems. In Karnataka, while Private School students were better than their Government counter-parts in Word Processing, Spread Sheet, Graphics, Web Designing and Chatting, the Government School students were better at Presentation Tools, e-Mailing and Internet Browsing. Similarly, while Private School students in Gujarat were better at Word Processing, Spread Sheets, Presentation Tools and Graphics, their Government counter-parts were better at E-mailing, Internet Browsing, Web Designing and Chatting. The results were therefore mixed.

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Government School students liked to draw and paint most and play games next. It was the other way round for Private School students in Gujarat where 49.8% ranked playing games as their favourite activity using computers! In Karnataka also there was similarity in the choices with Gujarat where most of the Government School students liked to draw and paint most and play games next. The favoured activities of Private School students were the reverse to that of Government School students in Karnataka but same as that of private school students in Gujarat.

16. While there was no difference in the mode of offering ICT courses or ICT based activities between Private and Government Schools in Karnataka as most offered them first as a separate and then integrated with other subjects, the emphasis on integrating technology was however apparent. The maximum number of hours spent on integrating ICT with other subjects was in Government Schools in Karnataka.
17. One of the assumptions of the study was that most of the ICT facilities are confined to boys and that the girl child is at a disadvantage. What the study revealed was an eye-opener. There were no gender differences discernable. In Gujarat more girls (55.8%) are using computers compared to boys (38.8%) and their numbers are also growing faster. This is apparent in Karnataka also

specially in the last 2 years.

The access of girl students is much more to Desktop Computers in Gujarat. Data suggests that it is marginally more than boys for TVs, RCPs and even Lap-tops, CD Writers, Scanners and Computer Speakers. In Karnataka, the access of girl students to various ICT tools in schools is marginally more than boys to TVs, RCPs, Desktops, Computer Speakers, Scanners and CD Writers. Comparing girls in Karnataka with their counterparts in Gujarat, one finds that RCPs, Desktop Computers and Computer Speakers are more accessible to girls in Karnataka. However, the availability of TVs to girls in Gujarat schools is more. Girl students in Gujarat had a distinctly better access to ICT tools for doing schoolwork. While this was also true for Karnataka the difference with boys was not as pronounced. Girls had better access to the Internet in both Gujarat and Karnataka and it was best for Karnataka girl students where 4 times more girls than the number of boys claimed to be able to access the Net on a daily basis.



**Vivek Bharadwaj** has 17 years of experience in policy formulation, programme planning and project management of various public service programmes in association with multilateral agencies and community based organisations within which time he has served with different capacities like Director Secondary Education, GOI, District Magistrate & Collector, Nadia, West Bengal, and Joint Secretary, Mass Education Extension, Government of West Bengal. He has a major role in formulating the flagship Govt programme ICT @ schools of the Xth Plan.

18. While it was difficult to come to the conclusion as to which among the two States was better in terms of access, utilisation and effectiveness of ICT tools, what did come across repeatedly during the analysis was the fact that Gujarat had substantial disparities between its urban and rural areas and Private and Government Schools. For example, when students from the two States were questioned about their access to ICT tools for doing class-work, these ranged from 41.5% in the affirmative in Ahmedabad to 9.1% in the affirmative in Surendra Nagar. Access was more evenly distributed between the capital and the Districts in Karnataka.

Similarly in Gujarat access to ICT tools was maximum for Private School students at 28.3%. Only 4.7% of Government School children had such facilities. In Karnataka, fortunately there was no digital divide discernable between the Private School and Government School students. As mentioned earlier Government School students in Karnataka had better access to the Internet. Overall too there was better availability of access to the Internet in Karnataka than in Gujarat. The responses of students to once a month and once a week usage was much better in the Districts of Bellary and Mandya compared to the Districts in Gujarat.

The number of students who had a mobile phone was 10 times more in Private Schools in Gujarat when compared to Government Schools. None of the Government School students had a PDA or an e-mail address or a personal website. In Karnataka the differences were not so stark. In fact, the number of e-Mail IDs were more in Government Schools than in private ones! ■