

A Cloudburst in the Classroom

The cloud could fill the gaps in India's education sector, but costs and last-mile connectivity are constraints – for now.

By NANDAGOPAL RAJAN

Bright smiles: NIIT Cloud Campus students in Delhi



NIIT's Campus in the Cloud

Blended Classroom
Centralised faculty, assisted by local teachers. Students interact with peers in other locations

Cloud Courseware
Content in a virtual space; interactive and accessible 24/7 from multiple locations

Anywhere Lab
Can practise using laptops or tablets. Lab delinked from location and timing

Online Assessment
Practice sessions to understand weak areas and to focus on those areas

Lessons on Demand
If students miss a class they can download a lesson and the instructor's notes, and learn

Buddynet
Students work on a project with friends, with faculty chipping in when needed

The average pupil-teacher ratio in various categories of schools covered in the All India Student Education Survey is a healthy 31. But the figure could go up to one teacher per 120 students and, in the worst cases, even 600. If you consider that most of them teach more than one subject. Even then, you have to overlook the fact that many of these teachers add to the numbers, but don't really add value to the education system.

The task is daunting – we need more than 350,000 engineering teachers alone to cater to some four million students in the field. That is

where technology can be used to augment the system. The cloud could be the wonder pill for what ails Indian education, but its adoption is hampered by costs and poor last-mile connectivity. As All India Council for Technical Education (AICTE) chairman S.S. Mantha says: "There is a lot of experimentation, but no massive implementation." But only widespread implementation will start changing the academic landscape.

"The cloud brings a lot of advantages," says Aravind Sitaraman, president, Inclusive Growth at Cisco. "It lowers costs, provides a degree of scalability and keeps the complexity in a central location." His company has developed an integrated hard-

ware-software cloud solution for education, called Cisco Education Enabled Development (CEED) 2700. Code-named Dwara, this all-in-one box promises to reduce the cost of implementing cloud solutions to a dollar per child per month (see *A Box Called Dwara*, page 65).

"If you have a teacher in one location, and she is good at mathematics, this technology can be used to virtualise her to other locations," says Sitaraman.

The Karnataka government already uses Dwara in a handful of rural schools, and to train teachers across some districts. Private schools such as the Oakridge International chain and technical education insti-

tutions such as the Netur Technical Training Foundation have also adopted this technology.

Some organisations implement cloud solutions with their existing bandwidth, and without extra hardware. Bangalore-based Aarus Network's CourseHub is one such low-bandwidth video capture, management and distribution platform targeted at educational institutes. Others, such as Gate Forum, use the cloud to help final-year engineering

students in small cities like Agra to prepare for the annual Graduate Aptitude Test in Engineering. But the largest on-ground implementation is NIIT's Cloud Campus, now available in over 150 centres nationwide.

NIIT gives students access to its faculty as well as round-the-clock availability of labs, course content and collaborative platforms (See *Learning in the Cloud*, page 64). So while hundreds of students enrol in small towns such as Bagdogra, West

Bengal, and Haldwani, Uttarakhand, to learn from the best faculty, in big cities ambitious 20-year-olds such as Ridhima Kapoor may find that the Cloud Campus gives them time, for example, to do an evening course in commerce at Delhi University.

NIIT chief executive G. Raghavan says their cloud campus basically addresses the need for flexibility and learning on demand. "Flexibility will be in terms of when, what and how to learn," he says. "This