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Online Labs for Schools on Low Cost Tablets

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By **Prof Raghu Raman**, Director, Center for Research in Advanced Technologies for Education (CREATE), Amrita University

India's educational challenge includes a large school going population, lack of science teachers and shortage of expensive science labs in schools. Online Labs (OLabs), the free and open-access, digital interactive multimedia- based science labs for schools, addresses this challenge by adapting the solution of low cost Android-based tablets like Aakash. The phase 1 of the project covers

classes 9 and 10, to be followed by phase 2 which covers classes 11 and 12, and additional subjects like English and Maths and have regional language support.

Mata Amritandamayi, Chancellor, Amrita University, has inspired us to understand the educational challenges faced by our country and tackle them using research-based holistic solutions. OLabs on low cost tablets like Aakash are guided by her vision of providing affordable and high quality learning programmes to lakhs of school-going children all over India, including those in rural areas to reduce the digital divide.

The research we do is focused on developing responsive UI-based content for the tablets and our approach is fully integrated into the formative assessment process and most importantly, coexists with the present e-Learning environment. With tablets, we are foreseeing a renewed effort on teacher empowerment.



A teacher trying out an experiment on the tablet during the Online Labs workshop held at DAV Public School, Chandrasekharpur, Bhubaneswar, 21 January, 2013



Students using the tablet during the Online Labs workshop at the DST Inspire Camp held at Amrita Vishwa Vidyapeetam, Amritapuri Campus



Tribal students at Manathavady using the Aakash Tablet



Students using the tablet during the Online Labs workshop at the Amrita International Conference on 'Women in Computing' held at Amrita Vishwa

A significant milestone for OLABs was the recent circular from CBSE recommending OLABs as a teaching aid for their 14,000+ schools. OLABs training has been provided at various workshops and conferences and we have trained over 1,200 teachers from 200 schools and have 19,000 registered students/teachers. OLABs videos, animated demonstrations, mathematically based simulations, and self-evaluation exercises provide an interactive, life-like learning environment that optimises student learning. OLABs are designed by subject matter experts to arouse the curiosity of students and to motivate them to learn advanced concepts through interactive online learning. A recent study showed significant performance improvements in conceptual and procedural skills of high school students with OLABs.

"Online labs is one of the advanced teaching systems which can make a revolution in education, especially in science. It is one of the modern methods which helps to teach science and helps the student to smoothly conduct the lab," says Niranjana Parida, ODM Public School, Bhubaneswar.

OLABs project is jointly developed by Amrita University and C-DAC Mumbai, under a research grant from DeitY, Government of India. OLABs is available free for schools at its website. Other innovative educational technologies from Amrita University include Computer-based Adaptive Learning, Vocational Education with Haptics, Virtual Labs for Higher Education and A-VIEW, a distant learning platform.