

## A transformative change in education

**The Asha Kanini project of IIT Madras's Pravartak and Asha Chennai is helping integrate technology into classrooms and bridge the learning gap in rural India**

In spite of the increasing access to education in rural areas, the gap between rural and urban educational infrastructure in India remains huge. Infrastructure in rural schools continue to be abysmal. Dropout rates are high and has even gone up substantially during the pandemic. Low pupil-teacher ratio, teacher absenteeism, poor quality of teaching because of the lack of trained teachers, emphasis on rote learning and the lack of attractive teaching materials in rural schools plague education in rural areas.

The use of digital technology can be a game-changer in this scenario. Multimedia teaching tools such as the use of computers, videos, interactive simulations can make learning interesting for students, thereby incentivising students to become more regular in their attendance. They enable teachers to deliver information in an engaging manner to a larger number of students making the scarcity of teachers less of a problem.

The capability of the teacher becomes crucial for the effectiveness of technology. To integrate technology into the classroom, teachers need to be able to use that technology to support the curriculum and create a cooperative

learning environment. Students too need to be trained to use this technology in the right way. This means a change in the pedagogy to encourage and make productive learning possible.

▼ **ENGAGING MINDS**  
Videos and multimedia tools in classrooms



### 22%

Schools in India have the overall availability of computing devices, with rural areas seeing 18% provisioning compared to 43% in urban areas

Source: Unesco

### 26.5

Pupil-Teacher ratio for primary in 2019-20 compared to 34.0 in 2012-13

Source: Ministry of Education

### 13-15%

Of children overall achieve problem-solving and analytical skills and higher conceptual understanding (NCERT, 2020)

### 14%

Rural schools in India have internet connectivity compared to 42% in urban areas\*



#### Empowering teachers

The Asha Kanini project launched by IIT Madras's Pravartak in collaboration with Asha Chennai is aimed at making best quality digital resources available to teachers and students to enhance the classroom teaching experience in rural schools. Asha Kanini is an application developed by Asha Chennai, an NGO working for the education of the underprivileged, with the assistance of IIT Madras. It is focused on helping teachers identify appropriate content for the particular lesson they are teaching and effectively use it to improve student learning. Its network independent and can be customised to work with any language and curriculum.

Under the John Crane funded project, the Asha Kanini software, developed with the need of rural schools in mind, is being consistently improved and upgraded. The platform is already used heavily

at the 100+ schools supported by Asha in Tamil Nadu and Uttar Pradesh. As part of the project under Pravartak, the aim is to train teachers at all government schools in Thiruvallur district of Tamil Nadu on the use of the Asha Kanini platform so that they can effectively use technology to aid education in their classrooms.

IIT Madras and Asha will also analyse the usage of the product and contents in order to improve the user experience. "We want to know how effectively the digital content is being delivered to candidates. We are providing devices with soft sensing that will give us the data points on a cost-effective and easily maintained software," says Prof. V. Kamakoti, Department of Computer Science and Engineering, IIT Madras, who is spearheading the Pravartak project.

#### On Pravartak

The Department of Science and Technology, under its National Mission on Interdisciplinary Cyber-Physical Systems has funded IIT Madras to host the Technology Innovation Hub (TIH) for Sensor, Networking, Actuators and Control Systems (SNACS) area.

IITM Pravartak Technologies Foundation has been established by IIT Madras to host this TIH.

**Progressing along triple verticals**

There are three pillars of Asha Kanini – **digital content, software development** and **training** of teachers.

Asha Kanini collates **content** already available for free on the web and maps it according to the needs of lessons for each class. Select content has been compiled from Diksha textbooks, content developed by the Khan Academy or Azim Premji Foundation or the Central and state government vetted content such as that based on Tamil Nadu’s own Samacheer Kalvi curriculum. The content has been mapped to the needs of UP schools as well and can be mapped according to the needs of any curriculum. Together with this, lesson plans are also prepared to make it easy for teachers to apply in schools, digital worksheets for students and classroom activities to enhance conceptual learning. “So far 65+ packages have been created for Tamil Nadu and around 20 for UP, depending on various needs,” says Mr. Rajaraman Krishnan of Asha Chennai. Regular assessments of students are undertaken to gauge their learning.

The Asha Kanini **software** has been developed with the help of IIT Madras alumni. It was initially developed for Windows, but following the pandemic, development for the Android version was speeded up. “We knew children would be able to access content through smartphones, so we concentrated on developing the Android version,” says Prof. Kamakoti. A dedicated [website](#) has also been created.

The project engages Kanini trainers who are mostly experienced computer teachers. They train government teachers to effectively use computers in the classroom and teach students using Asha Kanini content. Asha and Pravartak also maintain the computers in these schools and where possible make additions from corporate donations. Training was greatly affected because of the pandemic but the time was utilised to make the training and learning materials more robust. We hope to reach over 800 government schools during the 2021-22 academic year. We have already reached out to about 100 schools since they reopened on Nov 1, 2021.

**ASHA KANINI APP FEATURES**  
Ensuring ease of use



**TRAINING OF TEACHERS**  
One of the major pillars of Asha Kanini

**Way forward**

- To have a broader pilot in Thiruvallur district to collect data and help understanding of how Asha Kanini is being used and use the data as guide for future work
- To cover all 1,200 government schools and propagate use of Asha Kanini
- To install Asha Kanini in schools that have computers and arrange to provide computers in smaller schools, with students less than 50, that do not have computers with corporate support
- Reach out to schools beyond Tamil Nadu
- Ramp up training capabilities



Low Res

**FAST LEARNERS**  
Students giving a presentation in school

“The John Crane funded project is extremely interesting and very close to what Pravartak is doing in cyber physical systems. It is helping us closely monitor the education that is being imparted.”

Prof. V. Kamakoti

“It is important to make teachers understand the learning process so that they become better teachers. But scaling of this requires technology, and this is where Asha Kanini is making a difference.”

Rajaraman Krishnan

**Team members**

Prof. V. Kamakoti  
*Department of Computer Science and Engineering, Associate Dean of IITM, and Principal Investigator on this project*

Rajaraman Krishnan  
*Project Steward, Asha Kanini*

**PRINCIPAL FUNDER**

John Crane Sealing Systems India Private Limited

**Project outcomes**

**800**

Government schools covered in Thiruvallur district. This is above and beyond the 100 school already supported by Asha

**65+**

Content packages for Tamil Nadu and 20 for UP

**Android version for platform**

Usage data on how technology is used for teaching for all these 800 schools

**LEARNING TOGETHER**  
Teachers learn to identify appropriate content for use in the classroom



Low Res