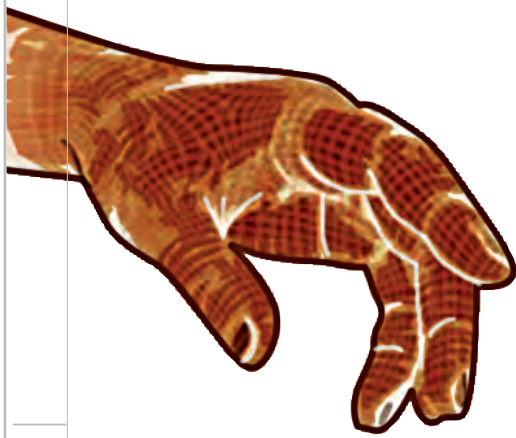


Muhammad Yunus was awarded the Nobel Prize in 2006 for his role in founding the Grameen Bank that offers microcredit in Bangladesh

cover story



The Amrita School of Engineering, which was established in 1994 at Ettimadai, predates Amrita University



[research wing]

Amrita University deals with real-life issues and immediate applications of their research and innovation

DELIVERY WITH A HUMAN TOUCH



Preethi Ann Thomas
AMRITAPURI

As we move ahead with the times, gadgets get fancier and attempt to make our lives simpler. But what good is technology if these advancements can't reach or help 9.4 per cent of the population that is unemployed (as per figures of 2009/10 fiscal year), 41.6 per cent of people living below the poverty line (living on less than \$1.25 a day or less according to the World Bank report of 2011) and the 25 per cent illiterate in the country?

Moving ahead with an unmatched drive to develop technology for societal benefit and to enable wider reach, is Amrita University, with five campuses across south India in Amritapuri and Kochi (Kerala), Ettimadai (Tamil Nadu), Mysore and Bangalore (Karnataka). Through academic research, workshops, conferences and collaborations with institutions across the globe, Amrita University has been unassumingly engaging in extensive work that is addressing the need of the hour to extend technology to the common man. In the words of Nobel laureate, Prof Muhammad Yunus, "This is not just another university, but a very high-quality, world-class university, focusing on technology and research, dealing with very concrete issues which have immediate applications."

ICTEE

The international conference hosted by Amrita University at the Amritapuri campus on January 3-5 focused on technology-enhanced education. With the theme, Technology for societal benefit, it reached out to international delegates and Indian institutions by offering simple solutions to many societal problems.

This conference brought to light the research work undertaken at the Amritapuri campus. Spread over 80 acres in a picturesque locale, this university is home to numerous schools and research centres, that are currently involved in research, innovation and tech-



Photos: MP Jayan

nological advancements that will benefit three segments — higher education and traditional learners, vocational education and non-traditional learners and the school segment.

For the people

With India's population and employment concerns, there also seems to be a lack of skilled workers. Amrita's unrelenting want to empower economically marginalised communities with vocational education has been instrumental in launching programmes like SAVE, a project at AMMACHI Labs (Amrita Multi Modal Applications using Computer Human Interaction), which employs technology like Haptics to provide an individualised learning experience by simulating real-life situations for non-traditional learners. So



you can use technology that can teach you plumbing, carpentry, etc without having to touch a spanner or saw. SAVE also has a computerised university-certified vocational education and training programme complimented by Life Enrichment Education.

But that's not all! Amrita also thought about the 70 per cent of rural population that does not have access to technology and developed MoVE (Mobile Vocational Education), which utilises fully equipped vehicles, powered

by solar energy to provide vocational education in logistically and geographically diverse areas.

Fifty-year-old Geetha Babu, one of the seven to have graduated recently, is overwhelmed with pride when she talks about having learned plumbing skills through the SAVE programme at Amrita. "We have become confident and feel proud that we can contribute to expenses at home and raising our children. Plumbing is no longer a man's domain," she says with a huge grin. She has now joined as an apprentice at Amrita and also offers plumbing services to her neighbours.

The inspiration

The university derives its inspiration from their chancellor, Mata Amritanandamayi, fondly known as Amma, who, according to college authorities, believes that research can contribute significantly to solving the problems of society. "Our mission is to be a significant contributor towards solving global challenges — be it water, energy, environment or IT. We also look at extending our knowledge towards the government, industry and other institutions," says vice-chancellor, P Venkat Rangan.

Research hub

From development of state-of-the-art, cost effective and advanced biomedical devices, computational modelling and simulation of biological systems, to patenting and developing a low cost portable x-ray digitiser for the telemedicine programme at ISRO and developing an insulin pump for TIFAC, the School of Biotechnology headed by Bipin Nair has been busy in generating affordable, preventive and therapeutic innovations.

Disaster alert

Recognised for its deployment of the first-ever wireless sensor network system for predicting landslides, Amrita's Centre for Wireless Networks and Applications deploys a system that uses wireless sensor technology to warn



We are a young university and our mission is to be a significant contributor towards solving global challenges

P Venkat Rangan, VC, Amrita University

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cover story



Haptics refers to the sense of touch. The technology interfaces with the user through the sense of touch

A mrita University is a multi-campus one, accredited by NAAC with 'A' grade and has signed MoU's with top universities

people of an impending landslide. This would thereby facilitate evacuation and disaster management.

The Indian government, too, has shown interest in deploying this facility in landslide-prone areas like the Himalayas and the Konkan region. The department, headed by Maneesha V Ramesh, provides master's programme in wireless networks and applications and PhD programmes in computer sciences, disaster management and earth sciences.

Patents

Two patents have been approved by USA, one for the hospital information system developed under Pradeep Achan and for the insulin pump developed under Bipin Nair. A dozen more have been applied in the USA and in India.

Outreach

Talk to the Teacher programme, in partnership with IIT-Bombay has been developed by Amrita Virtual Interactive E-learning World (AVIEW) under the national mission on education through information and communications technology, and funded by the Union HRD ministry. AVIEW's e-learning tools facilitate live interaction between teachers and students, wherever they are. It also won the Jury Award for the Best Innovation in Open and Distance Learning under Higher Education in the World Education Summit 2010. Details at www.aview.in.

Simulating reality

The Virtual and Accessible Laboratories for Universalising Education (VALUE) experience at Amrita is one-of-a-kind. Whether you want to explore the mysteries of sub-atomic particles, measure the velocity of a speeding bullet, wield a scalpel with the skill and precision developed by surgeons or invent the next big thing in electronic gadgets, these virtual labs will give you the experience of doing real lab work, by graphically resembling equipment and simulating a virtual medium. They have put these labs to test at their three engineering colleges, conducted nationwide workshops in 155 institutions and now, there are at least 50 nodal centres that want to use this in their daily curriculum. This is not just for students, but for teachers too to make up for lack of research.

With support from the HRD ministry, Amrita Vishva Vidyapeetham along with several top IITs including IIT-Delhi, IIT-Kanpur, IIT-Kharagpur, IIT-Guwahati, IIT-Hyderabad, etc and other institutes, created virtual laboratories in several disciplines. This will provide maximum benefits towards the study of experimental concepts and their applications. "Some labs use interactive animation while most virtual labs offer mathematical simulations of real-life scenarios or even remotely-triggered experiments that students can use from an internet-enabled PC," says Krishnashree Achuthan, head of department, Virtual Labs.

Start young

The Centre for Research in Advanced Technologies for Education (CREATE) is an initiative by Amrita University, that works towards providing effec-



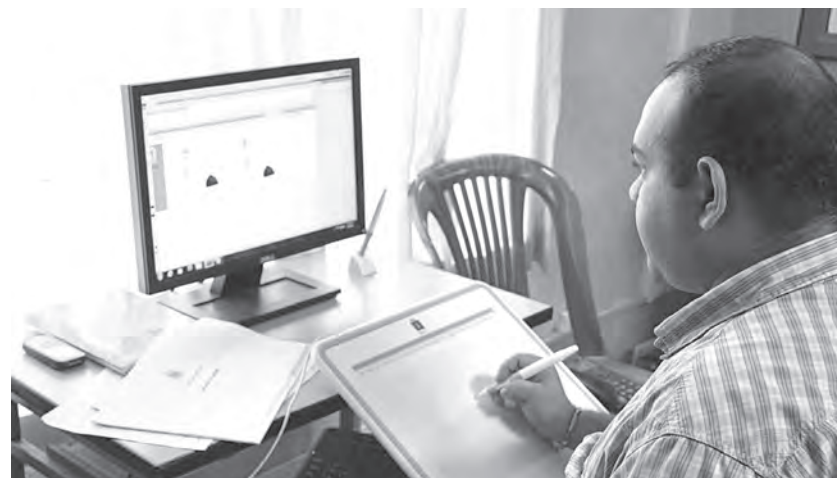
Amrita University has pioneered an integrated e-learning and m-learning framework to reach the students who do not have access to computers

Raghu Raman, Director, CREATE



It's in the air

As you take a walk through the campus at Amritapuri, you realise that more than anything, there is peace and serenity, which probably inspires these bright ideas. Everyone on campus has a contagious smile and humility that immediately draws you to the life at the university and the person behind this impact, Amma. They find time for extracurricular activities like sports, dance and music and also engage in *seva* at the ashram, meditation, and students do not hesitate to pick up the ladle to serve food in the dining room



tive, low-cost educational technologies to improve the quality of education in the K12 segment. It has pioneered large-scale deployment of intelligent tutoring and adaptive assessment systems that allow students from diverse socio-economic backgrounds to benefit from individualised learning. Their multimodal language labs use immersion techniques that can also be used by students to learn life, soft, language and pronunciation skills.

Online Labs have been created in collaboration with the Centre for Development of Advanced Computing (CDAC), under a research grant from Department of IT, which provides online practical science experiments that include 2D, 3D simulations and interactive animations. Personalised learning, cloud-based e-learning network, etc are all projects that CREATE has launched for the young ones. Led by director Raghu Raman, every week

over 30,000 students from schools in rural and small city neighbourhoods use this unique learning programme.

"CREATE at Amrita works as a consortium partner in various projects with renowned Indian institutes such as IITs, C-DAC and international universities such as Carnegie Mellon University (CMU) under international and government grants from the Central department of information technology, HP Global Social Innovation and National Mission on Education through ICT (NME ICT), govt of India," pipes Raghu Raman with pride.

Prof Candace Thille from CMU adds, "CREATE is the only research initiative from India to be included in the nine-country worldwide consortium project called Measuring Learning, something which will help educators quantify how much of what was being taught was grasped by students."

Student involvement

"Be it AVIEW, Save or wireless technology, we do our level best to involve students in the research work at the University. I hope these educational tools will help students understand complex scientific questions better, while simultaneously motivating them to pursue research," explains Rangan. For this reason, one whole semester in a UG or PG student's life is dedicated to research, at the end of which, they are required to submit a paper.

Harilal Parasuram, a PhD student in computation and neuro science, says, "What we get here is a family-like atmosphere, apart from the complete freedom to access and utilise equipment and devices across labs for our research. There are no restrictions to good things here. If affordable and impactful, the university will readily accept our ideas."

Sensitising the world

"We would like to build a lot of collaborative relationships with universities of eminence to elevate the quality of education and research in the university. On the other hand, collaborators worldwide feel highly rewarded, with much higher sensitivity to societal problems by coming in contact with Amrita. We are inculcating a desire to make research relevant to society," says Venkat Rangan. Joint programmes, exchange programmes, twinning degrees are all possible at Amrita because of their collaborations with universities in Europe and USA.

Prime Minister Manmohan Singh, recently remarked that India is falling behind China in science and requires more investment. We believe that although funds can be mobilised, what we actually need in terms of investment are more initiatives and efforts to encourage research for problem solving, as Amrita is setting a benchmark for. Instead of starting commercially viable projects alone and being receivers of technology from the world over, researchers at Amrita are making ripples in the ocean that they believe will someday CREATE waves in R&D ■

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get in touch

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