Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY
Experiential Learning in Rural India
AMRITA University

- 5 campuses, 15 schools, and 150+ programs
- 2000 Faculty and 18,000 Students with 1:10 faculty-student ratio
- 600+ Faculties hold PhDs/DMs
- 51 Patents, 3500+ Publications, 6800+ Citations
- 76 International University collaborations
- 20 Centers of Excellence in Research
“To provide value-based education and mould the character of the younger generation through a system of wholesome learning, so that their earnest endeavor to achieve progress and prosperity in life is matched by an ardent desire to extend selfless service to society, one complementing the other”
Mata Amritanandamayi Math
A UNITED NATIONS RECOGNIZED NGO

Embracing the World is the global network of charitable projects initiated by renowned humanitarian and spiritual leader, Amma (Sri Mata Amritanandamayi Devi).

www.embracingtheworld.org
Unique Opportunity for You

A multidisciplinary theory–into–practice program that facilitates the research, development, and deployment of sustainable solutions for current challenges faced by rural communities in India.
Amrita University’s Live-in-Labs™ is designed to expose youth to problems faced by rural communities in India. Through experiential learning opportunities, the program aims to inspire innovation through empathy and the application of knowledge while developing collaborative problem solving abilities of participants.
Locations

27 States
150+ Villages
200,000 People
Objectives & Goals

Sustainable Development

- Education
- Skill Development
- Healthcare
- Infrastructure - Energy
- Water/Sanitation
- Income Generation & Empowerment
Thematic Areas

Environment & Farming
Education & Technology
Infrastructure & Facilities
Energy
Health & Livelihood
What’s in it for you

**STUDENTS**
Encourages a strong passion for developing innovative, applicable, and comprehensive solutions that address problems faced by rural communities in developing nations.

**RESEARCHERS**
Provide a unique environment for applied research, with a strong focus on the invention’s journey from research to market.

**UNIVERSITIES**
Leverage and apply technological advances in order to find new ways to overcome economic and social marginalization of rural populations in developing nations.
Overview - Live-in-Labs Video
Program-Phases

Phase 1 • Project Identification
Phase 2 • Team Build up
Phase 3 • Village Visit
Phase 4 • Design
Phase 5 • Prototype Development and Testing
Phase 6 • Implementation
Phase 7 • Maintenance & Training

Dissemination
Education
Education

Amrita RITE (Adult Education)

OLabs (Science Simulations)

VALUE (Virtual Laboratories)

Remote Triggered WSN Laboratory

Social Awareness (Gender, Substance Abuse)

Human Trafficking Awareness - Smart Decisions Software
Amrita RITE: Tablet Based Education

* Neo literates
* Tablet based education due to non availability of resources

* Tablet Based Software
  * Multilingual
  * Light weight software
  * Android based

* Hand writing recognition – learning to write
* Speech recognition (work in progress), multiple indian languages, locally on Android – for learning to read
Amrita RITE Launch

The Amrita RITE project was launched by Chancellor of Amrita University, Mata Amritanandamayi Devi on 27th September 2013, by handing over a tablet to Shashi Tharoor, former Minister of State for Human Resource Development, Government of India.
eLiteracy & Health Awareness for Tribals

The objective of the Amrita eLiteracy & Awareness is to spread computer literacy and health awareness among the ST people, who are generally unable to avail themselves of the benefits of eLiteracy. The training is through tablet computers and includes Awareness in Computer Concepts (ACC) and Health Awareness.

- To empower tribal people, particularly youth, through computer education.
- To create awareness about IT, Social and health awareness education.
- To provide quality computer education free of cost.
- Game oriented computer basic training and modular courses.
- Interactive education through software, games and e-books.
- Government certified basic computer course.

1000 Scheduled Tribes to be trained
OLabs: Online Laboratories

• Shortage of Laboratory Equipment's in High Schools
• Shortage of Trained Teachers

• Online Software with complete pedagogy: theory, procedure, animation, simulation, video, assessment's, references
• Multilingual Course material development by remote expert teachers using collaborative platform
• Tablet based education due to non availability of computer labs

• Under Digital India Program developed 130 science labs
• Trained 8000 teachers
• Implemented in 15000 schools

• Funded by Ministry of IT
• Evaluated, Endorsed, and Implemented by Ministry of Education
• Scalability and Sustainability achieved through collaboration between Academia, Ministry and NGO
OLabs: Online Laboratories

Subjects
- Physics
- Chemistry
- Biology

Languages
- English
- Hindi
- Marathi
- Malayalam

Deployment Matrix
- No of Schools: 12000+
- Deployed States: 26

Class Experiments: 9-12
- Experiments: 120+
Amrita Learning – Adaptive Learning

64363 Students

46 Schools

*As of August 2014
• A-VIEW: Amrita – Virtual Interactive E-learning World

• Designed for Education & Training

• Online & Offline Collaboration

• Funding by:
  • MHRD, DST, ISRO, TIFAC
Audio Video
Document Sharing
Whiteboard
Text Chat
Shared Browser
Desktop Sharing
Live Interactive Feedback (LIF)
Student Teacher Interaction
Record and Playback of recorded classes

Configurable Multiple Displays (1 to many)
Adaptive Bandwidth Usage (56k to 2MB)
No Proprietary Hardware (Use existing)
Multimodal Student – Teacher Interaction
Crystal Clear Live Document Sharing
Multi Device Compatible White Board
A-VIEW: IIT Bombay conducting e-classes to Pune and Nagpur

Prof. P. S. V. Nataraj conducting class from IIT-B to VNIT, Nagpur and COE, Pune through A-VIEW

COE, Pune receiving class from IIT-B through A-VIEW with a single Projector system

VNIT, Nagpur receiving class by Prof. P. S. V. Nataraj, IIT-B through the multiple displays of A-VIEW
A-VIEW: Packages

- **A-VIEW Classroom**
  - Used for Teaching / Training
  - One Teacher and Multiple Students
  - Hand Raise Option for Students

- **A-VIEW Meeting**
  - International Meetings
  - One Moderator
  - All participants see each other

- **A-VIEW Seminar**
  - Online Seminars and Conferences
  - Can hold seminar for a group of peers
  - Can pass control
A-VIEW: Advantage & Applications

- **A-VIEW is FREE**
  Designed for Education in India

- **A-VIEW is Adaptable**
  Variable Number of Displays
  Low Bandwidth Usage (Rural Areas)

- **A-VIEW is Customizable**
  for India’s Educational System
  for India’s Multiple Languages
  for India’s Existing Infrastructure

- **A-VIEW Classroom:**
  - Colleges
  - Schools

- **A-VIEW Meeting:**
  - e-Governance
  - Administration
  - Deployed at MHRD
VALUE: Virtual Laboratories

- Shortage of Laboratory Equipment's in Community Colleges
- Online Software with complete pedagogy: theory, procedure, animation, simulation, video, assessment's, references
- Course material development by remote expert teachers using collaborative platform
The virtual labs project has been funded by the National Mission on Education through ICT by the Ministry of Human Resource Development, Government of India and is being developed in partnership with IIT’s and other prominent universities across India. Under the National Mission on Education, over 150 laboratories are being built in various disciplines of engineering and sciences.

- Physical Sciences
- Chemical Sciences
- Biotechnology

- 352 Experiments
- 42 Laboratories
- 3 Broad Areas
Remote Triggered Laboratories

• Shortage of Laboratory Equipment's in Community Colleges

• Online Software with complete pedagogy: theory, procedure, animation, simulation, video, assessment's, references
  • Course material development by remote expert teachers using collaborative platform

• Scheduling Equipment Usage
  • Remotely operating, configuring, and triggering
  • Secure Access – Since it provides opportunity to upload software codes into our University Network

• Remote Triggering Protocol Development
  • Energy Management in Wireless Sensor Network
  • Time Synchronization
A real time remote triggered laboratory with multi-set, multi-group wireless sensor network experimental setup
A Wireless Remote Sensing, Experimentation, Monitoring & Administration Lab
Collaborative Platform Architecture

- Common set of **services** for distributed content

- Enables **rapid development & deployment** of Virtual content by remote & distributed faculty

- Consistent and rich **interactive experience** for learners

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122360 Users

1235 Experiments
National Knowledge Network (NKN)
(A Gateway to a Global Classroom)

- Object identification and tracking
- HD Video Panorama
- A state-of-the-art laboratory
- Multi-perspective classroom design
- Dynamic perspective switching
- Framework model

Consists of the Professor, Local Students, Remote Students

http://www.amrita.edu/center/awna
SanskAR

Understanding cultural compatibility and bridging cultures through participatory sensing based mobile applications

Obtained funding from United Nations Alliance of Civilization (UNAOC)

SanskAR App collects the compatibility data between various cultures

Developed an algorithm to analyze compatibility between cultures

Designed and developed AR based android game to incentivize cultural interactions
Power of the Adolescent Girl A programme by AmritaCREATE for adolescent girls to be Ambassadors with digital technology

- Human Trafficking Awareness
- Adolescent Health Awareness
- Respect for women - Introduce Non-intrusive customs
- Prevent Child Marriage, Child Labour,
- Keep girls in schools
- Adult Literacy & Education for Women
Some Success Stories in the field

• **Reducing Dropouts** Reduced dropouts from 16 to 1 in village in Ransai Maharashtra primarily through awareness sessions by Amrita University students.

• **Adult Education - Women** For the first time in Dagara Village, Gujarat, women studied beyond grade 8 and graduated from grade 10.

• **Equity in Education** Trained 422 (of planned 1000) indigenous people in computer literacy with 84% pass rate in government exam. 62% beneficiaries were indigenous tribal girls including some saved from abuse.

• **Literacy** Mastering Malayalam Alphabet in only 16 sessions with AmritaRITE technology v.s. 30 sessions with conventional learning
Amrita CREATE Impact

- States: 21
- Schools: 12000+
- Village Centers: 41
- Students: 270,000+
- Teacher Training: 30,000+
- Publications: 54+
- Patents applied: 3

3000 km
2000 miles
Skill Development
REDESIGNING
LEARNING PATHWAYS USING TECHNOLOGY
WHO ARE OUR END USERS?

- Scale
- Diversity
- Outdated Skills
- Managing Aspirations
- Insufficient Resources
- Accessibility

01 Mobility
02 Finance
03 Literacy
04 Stereoty PES
05 Vulnerable
06 Isolation
CREATING THE ATMOSPHERE
WHERE ARE THE TEACHERS?

FACILITATOR

SUBJECT MATTER EXPERT (SME)
VIDEO LECTURES
ASSESSMENTS
INTERACTIVE GAMES
3D GLOSSARY
SIMULATORS

PROGRESSIVE DISCLOSURE

OUR CVET METHODOLOGY

• Technical and non-technical courses
• Available in 8 languages
• Catered towards low-literacy audiences
MONITORING & EVALUATION

TRAINING CENTER MANAGEMENT VIA MYSANGHAM

ZONAL LEAD TO FACILITATOR COMMUNICATION VIA WHATSAPP

COMMUNICATING ACHIEVEMENTS VIA FACEBOOK

REMOTE MONITORING VIA AVIEW
AWARENESS
- Needs Assessment
- Outreach Programs
- Induction into Training Programs
- Sanitation and Hygiene

TRAINING
- Masonry, Plumbing and Plastering
- Soap Making
- Life Enrichment Education

IMPLEMENTATION
- Toilet Construction
- Social and Environmental Community Action
- Monitoring and Evaluation

BEHAVIORAL CHANGE
- Community Led Total Sanitation (CLTS)
- ODF Family Pledge
- Live–In Labs Mentor Network
- Control and Monitoring of Water Systems
- Sharing Knowledge

COMMUNITY DEVELOPMENT
- Improve Infrastructure
- Water Resource Management
- Entrepreneurship (Masonry, Soap and Block Making)
- Village Wiki: Online, Comprehensive Resource and Database

MAINTENANCE
- Toilet Maintenance
- Inventory Management

SUSTAINABILITY

CAPACITY BUILDING

COMMUNITY MOBILIZATION
COMMUNITIES OF LEARNING AND PRACTICE
Healthcare
Healthcare

Cardiac Diseases 4.6 Million 24.6%

Diabetes 40 million

Hypertensive 50% of the men and women

Sleep Apnea 35-40 million

Tuberculosis 10.1%

Healthcare Requirements from Doctors

Big Data Analytics

Affordable, Scalable, Medical Device Development

MEMS based Sensor Development

Wireless Technologies

Biotechnology

Nano-technology
Scalable & Affordable Healthcare Solutions

PHCs – cornerstone of rural healthcare

PHCs - 25020 Number

PHCs & Sub centers - Meet the health care needs of rural population
Healthcare - Architecture
Our Experience in Healthcare Solutions - Continuous & Real-time Monitoring

**Rural Healthcare Service**
- Wearable Wireless ECG
- Cuffless Blood Pressure
- Non Invasive Blood Sugar
- Non Invasive SpO2
- Real-time EEG. EMG
- Real-time Temperature Monitoring
- Lab on a chip development
- Low cost drug delivery systems
- Mobile app for Rural Healthcare Services

**Emergency Management**
- Wearable Wireless ECG
- Cuffless Blood Pressure
- Non Invasive Blood Sugar
- Non Invasive SpO2
- Real-time EEG
- Real-time Temperature Monitoring

**Geriatric Patients**
- Urinary Incontinence Device
- Wearable Wireless Tongue Controlled Assistive Device Using Optical Sensor
- Optical Sensor Based Tongue Controlled Assistive Device
- Wireless Interface System for Interpretation of Ocular symbols from People with Neuromuscular Diseases
- Vital Monitoring
- Sensors developed for Cholesterol, creatinine etc
Our Experience in Healthcare Solutions - Continuous & Real-time Monitoring

- **Cardiac Disease**
  - Wearable ECG Device
  - Sensor for Cholesterol

- **Neurological Disease**
  - EEG System
  - EMG System

- **Diabetics**
  - Real-time Drug Delivery Device - Insulin Pump
  - Sensors for Blood Sugar, Cholesterol, Creatinine etc.

- **Tuberculosis**
  - Pre warning using Smart Stethoscope
  - Real-time Image Processing Techniques

- **Malaria**
  - Real-time monitoring of patients
  - Sensors - temperature
A device to continuously monitor patient's ECG in real time & sends data to the patient's cardiologist/doctor.

- Comfortable and inexpensive wearable device
- Real-time sensing and data collection
- Real-time data processing and analysis
- Monitoring possible even when both the patient and the doctor are mobile
India’s Prime Minister, Mr. Narendra Modi, launches the prototype of “AmritaSpandanam”, a wearable Heart Monitor, during Amma’s 60th birthday celebrations.
Training at Amrita Institute of Medical Sciences to provide Preventive and Diagnostic Care
- Trained women from 9 states

Volunteers from villages are trained as Health Workers
- The health workers serve under the Doctor during monthly visits to villages to conduct medical clinics

The health workers provide first line of treatment
- Provide education about the basics of disease prevention
- Trained to conduct on-going sessions in Basic Hygiene, the care of safe drinking water and reeducating them in the use of their traditional home remedies

Self care is also addressed
- Yoga and meditation
- Easy access to health and nutritious food
- Health workers guide and motivate villagers to grow their own kitchen gardens, simple composting, and waste management techniques
Mobile Education Supports Health and Well Being

**MALNUTRITION**
Health awareness material
*Nutritional supplements* given in AmritaCREATE education center

**HEALTH CAMPS** for
Adolescent Girls & Children

**SUBSTANCE ABUSE**
School Student Ambassadors
build awareness among peers and in community

**2000+ HEALTH WORKERS TRAINED**
Amrita Hospital using AmritaCREATE Digital Technology
AmritaJeevanam - Health Awareness for Tribals

- Android based health awareness app
- Maintains medical history – Cloud based
- Early warning system
- Single interface for multiple measurement devices.
- Blood pressure, Blood Glucose etc.
Energy

Nano Solar Panels & Storage

Smart Distribution

Energy management

Renewable Energy Integration

Bio Fuel
Micro-grid is a local energy system consisting of distributed energy sources, storage and loads capable of operating in parallel with or independently from the main electricity grid.

- Higher security of supply
- Clean & distributed energy supply system
- Lower stress on transmission and distribution system
AmritaSphuranam – Rural Electrification

- No Electricity Access
  - Leading to lack of education, healthcare services, economic development

- Micro Grid Solar System Implemented
  - 6 clusters totaling 12 KW
  - 300+beneficiaries

- IoT system for real-time monitoring solar panels, battery condition and the home utilization
- Energy Exchange between Clusters
- Data Analytics on energy consumption pattern, renewable energy generation, renewable energy usage, health monitoring of the systems
AmritaSphuranam – Rural Electrification Using Micro Hydro

- No Electricity Access
- Leading to lack of education, healthcare services, economic development

- Micro Hydro System Implemented
- 5 kW System

- Energy to entire village
- Plan to implement remote monitoring systems for gathering real-time usage patterns, renewable energy generation, to improve the efficiency of the system etc.
Stabiliz-E (Stabiliz-Energy)

Result of immense need to move from the traditional, centralized, static energy grid towards decentralized & dynamic grid

- Low Cost Renewable Energy for Local Population
- Distributed architecture and decision mechanisms
- Wireless sensors for real-time grid monitoring & control
- Focus on Fault Detection & Reconfiguration
- New algorithms for enhanced grid management
- Distributed architecture and decision mechanisms
Water & Sanitation
Water Conservation & Distribution Systems

• Scarcity of Water
• No Easy Access to Water Resources
• Open defecation is prevalent

• Bore wells were dug in our villages in Rajasthan, West Bengal, Maharashtra, Kerala, and Odisha to provide drinking water
• Water Distribution System – Implemented in Harirampur in Rajasthan, Guptapada in Odisha, and Komalikudy in Kerala
• Rainwater harvesting was initiated as a pilot project on one farm in our Tamil Nadu village.

• Water to the door step of every house.
• Bore wells were dug, pipelines were laid, overhead water tanks were built, and pump sets were installed
• Plan to make real-time water conservation system by real-time monitoring of different water resources and integrating it with our IoT system
# Water Distribution Systems

**Harirampur Village, Sawai Madhopur District, Rajasthan**

<table>
<thead>
<tr>
<th>Village Population</th>
<th>Total Homes</th>
<th>Number of Taps Installed</th>
<th>Number of Liters in Water Tanks (2)</th>
<th>Days Spent in Village</th>
<th>Number of Team Members</th>
<th>Total Number of Labor Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>550 People</td>
<td>65</td>
<td>70</td>
<td>5,000 x 2 = 10,000</td>
<td>120</td>
<td>12</td>
<td>14,000+</td>
</tr>
</tbody>
</table>

**Guptapada Village, Khurda District, Odisha**

<table>
<thead>
<tr>
<th>Village Population</th>
<th>Total Homes</th>
<th>Number of Taps Installed</th>
<th>Number of Liters in Water Tank (1)</th>
<th>Days Spent in Village</th>
<th>Number of Team Members</th>
<th>Total Number of Labor Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 People</td>
<td>62</td>
<td>37</td>
<td>Now: 5,000</td>
<td>120</td>
<td>13</td>
<td>16,000+</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Future: + 5,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Komalikudi Village, Idukki District, Kerala**

<table>
<thead>
<tr>
<th>Village Population</th>
<th>Total Homes</th>
<th>Number of Taps Installed</th>
<th>Number of Liters in Water Tanks (2)</th>
<th>Days Spent in Village</th>
<th>Number of Team Members</th>
<th>Total Number of Labor Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>350 People</td>
<td>90</td>
<td>12</td>
<td>3,000 + 5,000 = 8,000</td>
<td>210</td>
<td>37</td>
<td>80,000+</td>
</tr>
</tbody>
</table>
Sanitation & Health Awareness

• Drinking water from our villages was tested
  • Three samples from the villages returned positive results for bacterial contamination

• Boiling of water is being emphasized in these places.
  • Regular Amala Bharatam Cleanup drives are being organized to improve the awareness about cleanliness and waste management

• Building of toilets was commenced by AMMACHI LABS of Amrita University in all villages.
  • Women were given the training and women groups are building toilets for their families

• More than 100 toilets were built
  • More than 200 toilets are under construction by villagers who got training

• Training on sanitation and health awareness were given
  • Train the trainers program were launched
Infrastructure
Infrastructure

Agriculture

Water Distribution & Quality

Eco Friendly Buildings & Drainage Systems

Waste management

MICRO PROCESSING UNITS

Disaster management
• Three farmers in Rajasthan have planted wheat this season without the use of any chemicals.
• One farmer in our village in Bihar has switched to organic farming completely. He has reaped good harvests of rice, chana and potatoes and encouraged by his efforts, other farmers are also contemplating about making a change.

• Three youth from our village in Gujarat were sent for training to Bhuj and after returning, have started organic cultivation on a small patch of land. This is encouraging, given that most youth these days do not want to engage in agriculture as a profession.

• Kitchen gardens are being encouraged everywhere to combat malnutrition, especially in children. In our village in Gujarat for instance, 80 families out of 127 have planted kitchen gardens. Similarly, in Rajasthan, 34 families out of 55 now have kitchen gardens.

• In Komalikudy, Kerala, hydropower station is installed to generate electricity for pumping the water and light the lamps in the houses.
• A mini-grid was installed in our second village cluster in Kerala in Wayanad to provide light to homes through solar panels

• Tree planting was initiated in several of our villages. In Andhra, a project was begun to plant thousands of trees over the next few years.
• Prototype smokeless chulhas are being developed in the HQ so that they may then be deployed in our villages.
MICRONet

Secure Mobile Infrastructure for Indian Coastal Application

Provide solution to the connectivity-at-sea problem faced by the millions of India’s Fishermen today

- Array of possibilities suitable for the off-shore communication
- Trigger and promote research on cutting edge wireless technology
- Cost-effective Mobile Infrastructure for Coastal Regions of India to enable offshore communications for the vessels at sea.
Two valid landslide warnings have been issued to the residents of Anthoniay Colony, Munnar, Idukki District, Kerala.

150 geophysical sensors integrated into deep earth probes have been installed, from which the data is transferred to our Data Analysis Center where complex analysis is conducted to determine the risk of landslide.

Received the Runners-Up Award for Rural Innovations from NABARD in 2012

World’s first comprehensive Wireless Sensor Network System for Landslide Monitoring and Detection

A fully operational landslide monitoring and detection system that has been operating 24/7 since 2009.

Patent: “Network-Based System for Predicting Landslides and Providing Early Warnings”, Dr Maneesha V. Ramesh, No: US8892668
FloodEVAC

Indo German Project for Flood Monitoring and Evacuation

- Early warning of Floods
- Wireless Heterogeneous Networks & Crowdsourcing Network Using Mobile Phones for Real-Time Data delivery
- Predictability of the whole system enhanced by integrating it with the modified & improved flood simulation, real-time image and video processing
# Crowd Sourcing System for Multi-Hazard Monitoring and Warning

## Real-Time Data Retrieval

- Crowdsourcing using mobile phones
- Wireless Sensor Networks
- Maps
- Historic Data
- Facebook
- Twitter

## Wireless Heterogeneous Network

- Cellular Network
- WiFi
- Bluetooth
- Wired Network

## Warning of Disasters

- Rainfall
- Flood
- Drought
- Landslides
- Avalanches
- Earthquakes

## Services

- Distributed Data Collection
- Real-time Data Visualization
- Large Scale Warning
- Localized Warnings
- Participatory Sensing Opportunity
- Multi Hazard Warning
- Escape Routes
- Awareness Materials Dissemination
Income Generation & Empowerment
Agriculture

Organic Farming

Fertility monitoring

Smart irrigation

Environmental impact monitoring

ROI

IOT support
Smart Sesame Farming & Context Aware Wireless Irrigation System
Income Generation

- Income generation using local resources

- Self Help group
  - For savings
  - For income generation

- Plumbers, Masons etc.
- Tailoring, Artists etc.
- Health Workers

- Training Life Skills
- Entrepreneurs – furniture, lemon grass distillation, cardamom processing

- Waste to Wealth
INCOME GENERATION

- The focus is on income generation using local resources. For instance, training was provided to our village women in Karnataka on how to use jackfruit that is plentiful there to make different products.

- We have begun organizing women in our villages into self-help groups both for savings and for possible income generation activities.
RECENTLY, 9 WOMEN FROM JHARKHAND, UTTARAKHAND AND UTTAR PRADESH COMPLETED THE WASTE-TO-WEALTH WORKSHOP IN TAILORING AND ARTS / CRAFTS IN AMRITAPURI HQ WHEREIN THEY LEARNT TO MAKE USEFUL ITEMS FROM OLD FABRICS AND DISCARDED SOFT PLASTIC. THESE WOMEN HAVE RETURNED TO THEIR VILLAGES AND ARE PLANNING TO CONDUCT MORE SUCH WORKSHOPS THERE.
INCOME GENERATION
Bhojpur Mahadalit women turn toilet construction trainer

Subhash Pathak

The nightmare of open defecation will no longer haunt the women of Ratanpur Mushahari, a nondescript village of about 30-35 families, situated in Garhani block of Bhojpur district.

They have constructed toilets equipped with basic amenities sans any help from the government agency. They also acquired the skills of constructing the cement structure with plumbing and electrical fitting, which will help them to transform their lives.

On Saturday, Mata Amritanandmayi Mutt (MAM) organised a function to inaugurate different units of the community toilets built by the women villagers at Ratanpur. The block education officer of Garhani had been present during the inaugral function as block development officer was conspicuous by his absence.

Ratanpur is one of the two villages, the MAM had adopted for women's empowerment belonging to deprived sections of the society.

Their motto was to develop a sense of sanitation and train them in skills to become bread winners.

North zone head of the organisation, Prema Pillai, who spent several days with women of the Mushahari community said they had conducted an audio-visual demonstration through laptops to acquaint women of the basics of construction.

Apart from the sanitation outreach programme of the MAM, the villagers were provided construction material, tools as well as vocational training in masonry, plumbing and electrical works. It is also planning to conduct similar type of programme in many other villages in Bihar and Jharkhand in coming months.
ENTREPRENEURSHIP: BRICK MAKING
DURING LATE 2015, YOGA AND MEDITATION CLASSES WERE CONDUCTED IN OUR VILLAGES IN UTTARAKHAND, JAMMU AND KASHMIR, HARYANA AND HIMACHAL PRADESH.

AWARENESS MATERIAL IS BEING DEVELOPED TO COMBAT THE PRACTICES OF CHEWING TOBACCO, GUTKA AND CONSUMING ALCOHOL IN THE VILLAGES.
Journey So Far

**Amritasphuranam-1**
Solar Micro Grid
Amrita (EEE, WNA, Civil Engineering) & EPFL

**BioFilter**
Ammachi Labs, MBA-Master Thesis, UMass Dartmouth
Ammata (Mech, Chemical, Biotech) & Dartmouth University

**Organic Farming**
Ammachi Labs, ISTOM France

**Empowering Artists**
Ammachi Labs, MBA-Master Thesis, UMass Dartmouth
Journey So Far (Con’t)

**Amritisphuranam-2**
(Micro Grid – Micro Hydro)
Amrita (WNA, Civil, Mech) & EPFL

**Rural Sanitation model**
Amrita (MSW, Biotechnology, Ammachi Labs), EPFL, MIT

**Anti Alcohol Abuse Awareness Program**
Amrita (CREATE Labs, MSW), Harvard School of Public Health

**Solar Powered Lemon Grass Distillation Unit**
Amrita (Chemical), TU Delft
“We got a chance to interact with those peoples and they share their problem with us and also it was really an inspiration for us to know that we are all provided with many facilities which they lack. It made me realize that how blessed each one of us are, we have lived our lives in luxury without having to bother about anything but ourselves.”

Devika
S1 Mtech AmritaWNA, AMRITA

“Service trips and service learning is very important as opposed to just living in a culture. When you are working with the people, you really get to know where you are as opposed to being a foreigner who has been transplanted there. Thus, I found this to be one of the most valuable trips and I would definitely like to come back and continue the work I did.”

- Meghan Gates, 2nd Yr. MFA
University of Massachusetts (Dartmouth), USA
Journey So Far (Con’t)