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**Country Report**


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## India Report\*

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After 25th AABE at Kula Lumpur, India hosted 26th AABE at Goa from September 20-23, 2016 and during this period we formed AABE India Chapter. The members of AABE India Chapter are organizing various activities: workshops, seminars, demonstrations and excursion. Apart from AABE India Chapter, there are many associations in India which are working in the area of biology education from school to college level.

The following activities have been conducted by AABE India Chapter's EC members.

### 1. Activities Organized by Dept of Microbiology, St. Ann's College for Women, Hyderabad *Hepatitis Awareness Programme*

Department of Microbiology of St. Ann's College for Women joined hands with Department of Gastroenterology, Nizam's Institute of Medical Sciences (NIMS), to create and increase awareness about Killer Hepatitis B viral infection and educate common people about the importance of vaccination and prevention of this disease. Six student volunteers studying final year microbiology actively took part in all activities carried out by Department of Gastroenterology, NIMS.

- Volunteers helped in organizing *Viral Hepatitis B Poster Competition 2016* at about 10 schools in twin cities (Hyderabad and Secunderabad). The competitions have been conducted for 8, 9

and 10 class students of different schools. Schools where the volunteers conducted the competitions are as follows:

- Hanuman Vidhyashala State
- Hanuman Vidhyashala CBSC
- R. P. H School
- Naya Pool Government School
- Gitanjali Dharmashalay
- V. V. Vidhya Kanyashalay School
- Vivekanand School
- St. Andrews High School
- St. Anns Girls School
- Johns Boys High School

- Student volunteers participated in *Hepatitis Awareness Walk*.
- Volunteers took part in *Hepatitis Screening Camp* at NIMS.



### *Feedback of Students*

All student volunteers expressed that they had enhanced knowledge on Hepatitis B viral infection (transmission, immunization, prevention, diagnosis and control) at the end of the pro-

gramme and felt happy in participating in this event.

## 2. Preparation of 'Extraction of DNA Video'

Collaborative Undergraduate Biology Education (CUBE) is an initiative of Homi Bhabha Centre for Science Education, TIFR. CUBE inculcates interactive and participatory learning in science education among students.

CUBE organized a competition for students titled 'DNA: THE JUGAAD WAY' using common household (kitchen) chemicals for "Anil Sadgopal People Science Award" for popularizing biology.

Students of II year B. Sc. have prepared video under our guidance. For semester IV these students study microbial genetics. Practical syllabus has hands-on activities like 'Extraction of genomic and plasmid DNA from Bacteria,' 'Transformation as a method of genetic recombination in bacteria' and 'Agarose gel electrophoresis for separation of DNA.' In this view, DNA extraction is a first step and, therefore, they could do it independently by giving inputs in preparation of this video as a product. Students have prepared a video on *Extraction of DNA from Banana* using common household materials as a basic aid for understanding the concept of molecular biology.

## 3. Workshop on Isolation & Preservation of Pure Cultures

### Workshop

On 25th November, 2016, a workshop on *Isolation and Preservation of Pure Cultures* was organized for 30 students of M. Sc., Department of Biotechnology, A. V. College, Himayat Nagar, Hyderabad. Dr. Sneha Gogte, HOD, Department of Microbiology, St. Ann's College for Women was the resource person along with two final year B. Sc. microbiology student volunteers.

Workshop started with a thought-provoking lecture on the importance of studying microor-

ganisms by Dr. Sneha. The participants were then demonstrated step-by-step, the techniques of isolation and preservation of pure cultures using PowerPoint presentations. Petri plates with various live cultures were shown and biochemical tests were demonstrated so as to show the importance of having pure cultures in identification and diagnosis. The importance and details of various culture collection centres both at home and abroad were also discussed. The lecture was closed by presentations on modern research areas in microbiology like biosensors and quorum sensing, thus providing the students a leap into the current research.

### Feedback of Students

All participants reported positive feedback and indicated that the lecture ranged from a useful to invaluable learning experience.

## 4. Integration of ICT in Learning Process & Developing Virtual Lab Exercises

### Go Digit All

Dr. Sneha Gogte and Ch. Jyothi, Department of Microbiology, St. Ann's College for Women, Hyderabad, organized the activities.

Final year students of microbiology were involved in making video demonstrations of laboratory exercises in microbiology. Students were guided to the use of Information and Communication Technologies (ICT), and hands-on sessions from their curriculum in B. Sc. microbiology were selected to develop virtual lab in Microbiology Department at St. Ann's College for Women, Hyderabad. Nineteen video demonstrations are available in the Department as e-resources for hands-on practical sessions. Virtual lab on Gram staining technique, Pure cul-



ture isolation methods, IMVic tests, Negative staining, Coliform test, and MBRT are a few to name.

Discovery Science Exploratory (DSE)

*Learning Science is Doing Science*

*Mobile Science Lab for Schools*

*Hands-on Science & Skills Workshops*

- DSE is a hands-on learning program which has been introduced into the educational systems seamlessly.
- The initiative has a fully equipped and staffed science, mathematics and vocational skills lab on a mobile platform that visits each school once every week.
- The hands-on nature of the programme ensures development of all learning abilities. The skills classes make students understand the processes from raw material to finished products. The learning of Science, Technology, Engineering and Mathematics (STEM) becomes the natural base in this model. The trades taught are based on making student acquire all trades for Roti-Kapada-Makan (Food-Clothing-Shelter), basic requirements to sustain one's life.
- This experiential learning makes to explore the world using their own five senses and a rational frame of mind.
- Students acquire knowledge, become competent and develop intellect to lead life in joyous way.
- The world of gathering information turns into understandable way of acquiring knowledge.
- The models are built, experiments are performed by their own hands which make life come true, labs bring science to life.
- Peer-to-peer education is another facet of this model which happens as offshoot of interactive sessions.
- DSE Science and Skills programme has reached out to five private and two govern-

ment schools consistently for last two years.

- The two government schools were part of social outreach programme of DSE.
- Another milestone, this scheme has achieved, is reaching out to differently challenged – DIVYANG students of Aashay Aakruti School – a school for hearing-impaired students. Fifty students so far got the benefit of learning skills through our programme.

#### ***Feedback of students***

This technology-enriched exercise greatly enhanced students' motivation and developed positive attitude towards the course. Students emphasized that need of having clarity and in-depth knowledge on the subject. This activity also helped students to gain organization skills and enhanced their practical skills.

#### **Our Activities 2016-2018**

##### ***Food - Agriculture and Environment -***

Students produce a variety of vegetables using organic ways of cultivation. Students are trained in cultivation by Vertical Gardening method.

Students are trained in making Biogas.



***Vertical Gardening***



***Biogas production***

#### ***Feedback of students***

- Enjoy learning process
- Learning skills help as they can be applied in

day to day life.

- Problem solving capacity is enhanced.
- Learning skills help in understanding science and mathematics conceptually.

***Feedback of DSE Trainers and Director***

- Student's involvement and engagement is high.
- It provides joy of learning.
- It encourages students to observe, interpret, analyse processes.
- It builds analytical thinking, divergent thinking, figural memory and spatial abilities of a child.
- Student can relate to real time life situations through this experiential learning programme.

Dr. Sneha, Dr. Vishwanath Gogte and Dr. Dinesh Khedkar conducted many workshops for students and teachers at Amravati on folding microscope and research-based pedagogy tool.

Dr. Narendra Deshmukh also conducted many workshops for students and teachers on microscopes and biology-learning by doing and observing at different places of the country.

Other EC members also organized various workshops related to health, environment and teaching biology in their respective regions.

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