National Initiative on Undergraduate Science (NIUS)

Savita Ladage
National Co-ordinator, NIUS programme

On behalf of
Faculty, Scientific Staff, Project Staff of
Astronomy, Biology, Chemistry, Physics

Introduction

Launched in the year 2004 as part of HBCSE efforts to foray into the tertiary science education sector in India.

A natural sequel to the science Olympiad programme of HBCSE in 1998.

Aims at promoting learning of basic sciences through nurture camps and undergraduate research.

Major Concerns[1,2]

Declining number of meritorious students for B.Sc./ M.Sc. courses

Lack of opportunities for motivated B.Sc. students for serious engagement with the subject

[1] NIUS project proposal (2004)
[2] Position paper on Retention of Talent (*http://www.psa.gov.in/sites/default/files/file6.pdf,* accessed in October 2014)

Target Groups

Motivated undergraduate science students in colleges

Meritorious students who are pursuing professional degrees and are interested in basic sciences

Motivated college teachers

Distinctive Features

NIUS is an open ended programme. Its basic aim is to promote learning through projects and research like activities.[3]

Comprehensive in terms of subject areas
(physics, chemistry, biology and astronomy)

Sustained learning programme for 2-3 years

Primarily positioned at the first year undergraduate level

3. Goedhart, M.J., Finlayson,O.E., & Lindblom-Ylänne, S. (2009). Research–based teaching in higher level chemistry education. In: I. Eilks & B. Byers (Eds.), *Innovative methods of teaching and learning Chemistry in higher education* (pp. 61-84). Cambridge : RSC.

Distinctive Features (contd.)

Delinked from grades and examinations

Addresses the disconnect of research (and researchers) with the student-teacher community

Projects are offered in theoretical and experimental areas

With the primary aim being educational, NIUS allows much greater freedom in interpreting the meaning and scope of research projects.

Growth

Over the years, each subject cell has evolved a suitable implementation scheme, taking into account faculty strength, their networks with other institutions and student profile.

General structure for each subject today:
4 camps (1 exposure camp + 3 camps for project),
40-60 participating students.

Growth (contd.)

The NIUS experimental developments at HBCSE have helped the laboratory courses of different scientific institutions like UM-DAE CBS (Mumbai), NISER (Bhubaneswar) & IISER (Pune).

About 1000 students have attended NIUS nurture camps and about 120 of them have completed projects. Our network consists of about 70 resource persons across the country today.

Future Directions

- Developing pedagogical resources for students and teachers
- Conducting workshops for teachers (content and pedagogy)
- Broadening the canvas of projects
- Upscaling the programme and increasing its reach further. (number, frequency, multiple entry)