



बिरला प्रौद्योगिकी संस्थान BIRLA INSTITUTE OF TECHNOLOGY

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Best Practice #1

Title of the Practice

Immersive Summer Research Experience (ISRE)

Objective of the practice

The objective of the "Immersive Summer Research Experience" for the undergraduate students of engineering is to expose them to world class research in American institutes of repute. Apart from inculcating a research bent of mind in the students, this practice also aids in enhancing the employability of the students by making them aware of the contemporary practices in their subject domain on an international level. The cross-cultural interactions with international students imbibe a mindset with a global outlook and are conducive to overall development of personality.

The Context

Identifying and having access to reputed engineering institutes in the United States was a major challenge to start this practice. The finances required to fund such a program is also quite substantial and was another barrier to be overcome. We have a very strong base of Alumni spread across the world and our Alumni Association in North America has come forward to extend their unflinching support to make this program a grand success. Not only they helped us identify and access reputed institutes but also came forward to offer the required financial support. The first batch was sent in the summers of 2017 and thereafter the students are sent every year during the summer. Till date a total of 40 students have already been sent under the ISRE program

Practice

Presently the institutes to which the students are being sent are:

- Illinois Institute of Technology, Chicago
- Carnegie Mellon University, Pittsburgh
- Georgia Institute of Technology, Atlanta

In the summer of 2019, nine students were sent to Illinois Tech, five students to Carnegie Mellon and three students to Georgia Tech.

In the summer vacation just after the 6th semester (3rd year), the selected students are sent for the program. Based upon the academic records of the students, selection is carried out.

The funding per student is shared on a 1/3rd basis by our Alumni Association in the US, BIT Mesra and the students themselves. The duration is approximately 45 days.

The host institution assigns projects and project guides to the students individually or in a small group to carry out research related activities. After completion of their project, the students are required to make a presentation to the satisfaction of the host institute.

Evidence of Success

The program has been immensely successful. The value addition in the thoughts and concepts of the student is remarkable. There is substantial interest in research related activities of the students. The employability of the students has increased considerably and a number of students are *desirous of higher studies abroad*.

Problems Encountered and Resources Required

Although the problems encountered to start the project initially have been overcome, more universities of repute need to be identified and arrangements initiated to implement the program. Also, substantial funds are required to be generated for funding. Actions have already been initiated in this regard.

Best Practice #2

Title of the Practice:

Financial Support to students (UG/PG), scholars and faculty members for research, publication and conference

Objectives of the practice:

- to promote innovative thinking and give the students hands-on experience on research and real world problems
- to encourage students with an emphasis on projects that are industry relevant and have potential to lead to an entrepreneurship venture or a start-up model
- to inculcate qualities such as financial management, teamwork, problem analysis, investigation, design and use of modern and scientific tools, communication skills, ethics, time management, data processing and analysis
- to encourage self financed scholars with superior performance to complete their Phd within stipulated time period
- to promote research publication, and presentation of papers in international conferences by faculty members.

The Context:

The major challenge is that limited funding opportunities exist for carrying out innovative UG and PG projects which have potential for transforming ideas into marketable solutions. Due to this, the outcomes are not tangible within the project duration (one-two semesters), and students often do not get opportunities to embark on those research ideas. Keeping in view that these projects have the potential to pave the way for long term benefits for the society, the Institute has implemented the funding policy for UG and PG Projects.

Limited level of funding is arranged for self-financed Ph.D scholars to complete their doctoral work with partial funding from BIT. Faculty members are encouraged to attend international conferences and present research papers.

The Practice:

The uniqueness of this practice in the context of higher education is that it addresses affective and psychomotor domain attributes of students.

The prevalent emphasis is on cognitive domain due to lack of financial support of the hardware implementation of student projects. For setting a trend, the Institute is supporting at least a few selected projects based on its merit as judged by the committee constituted for the purpose.

The applications are invited by the HoD from UG/PG students during their 7th and 3rd semester, respectively in the prescribed format. The evaluation committee which includes Industrial experts in conjunction with faculty members

evaluate the merit of the proposal. The evaluation criteria are mostly relevant to Industrial needs and potential for technology transfer. Salient practices of funding UG and PG projects are mentioned below:

- Maximum fund allocated to each project is Rs. 50,000/- for UG and Rs.100,000/- for PG students. The fund is intended for expenditure, which includes raw materials for product fabrication, product testing, etc.
- Students and their guides should maintain a book of accounts of all the expenditure incurred under the project and must submit a statement duly signed by them and approved by the Chairman of DEC along with each report.
- Proper accounting for expenditure from the project heads are to be maintained by the departments as per the standard practice.

Funding to research scholars is based on qualifying competitive entrance examination and subsequent interview. Seed money funding is provided to newly joined faculty members to initiate their research activities and give directions to their future act of research. All the faculty members are encouraged to interact with the outside world through attending conferences, workshops and seminars wherein they are supported by the Institute, covering the expenses incurred on travel, registration and stay.

Evidence of Success:

Students are encouraged to present their ideas and preliminary findings in conferences organized by reputed Institutes. This provides a platform for students to establish networks with the research community and Industries. Few publications in reputed journals and the preliminary results emanating out of these projects form the basis of sanction of funded grants to the faculties.

As a visible outcome, students have participated in activities with full vigour in application of gained knowledge at multiple avenues such as building a hybrid electric vehicle, racing cars, etc. The teams involved in such activities are Team Srijan, Team Aveon and Team Firebolt, IET, etc. (https://www.bitmesra.ac.in/Visit_Other_Department_9910?cid=1&deptid=191&pid=187).

The follow up of this activity is to support students and research scholars to encourage and participate in different scientific forums. In pursuit of the above goal, the Institute is facilitating from earmarked funds to support students attending workshops to further the knowledge gained from the results of the funded research work.

Seed funded faculty members are encouraged to propose for funded research from various research granting agencies (Govt./Non-Govt.). The process of seed funding has resulted to an increase in project proposals from the Institute. The research scholar funding, supporting faculty members through attending conferences has improved the research output in terms of quality and citations.

Problems Encountered and Resources Required:

Financial support under this scheme is limited with the Institute and there are many projects from the students which could not be accommodated. Even after seed funding these projects the students who received the funding expressed the need for additional funds to enhance the outcomes of the project.



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