

Detailed Project Report
of
PoWER
Promotion of Work Experience and research
Indian Institute of Technology, Kanpur

Submitted by Team PoWER on October 12, 2008 and put in Students' Senate on October 19, 2008

A. Copy of Detailed Project Report

Terminology used in the document:

PoWER: Promotion of Work Experience and Research.

Real-life Projects: Projects that can have application in real-life conditions.

Clubs: Different interest-based clubs under Students' Gymkhana, IIT Kanpur

Societies: Departmental/area-specific representative bodies, IIT Kanpur

Independent Groups: Groups not officially endorsed by Students' Gymkhana, IIT Kanpur, but still functioning independently.

Other Organizations: Other organizations will include institutes like IITD, IISc, IISER; research institutes like TIFR, SEC Delhi; NGOs and NPOs.

Projects: Projects in which students can participate.

Interest-based Convergence: Integration of students and industries which benefits both.

Horizontal-Vertical Relationships: Relationships between students from same batch (horizontal) and different batches (vertical).

Work-Experience: Learning and gaining experience by working on real-life projects or ideas through assistance within or outside IITK.

Accessibility: Freedom to use the state-of-art facilities of different labs and get appropriate assistance from people managing the lab.

Credits: Academic credits.

DORD: Dean of Research and Development, IIT Kanpur

DOSA: Dean of Students' Affairs, IIT Kanpur

DOAA: Dean of Academic Affairs, IIT Kanpur

DRPG: Dean of Resource Planning and Generation, IIT Kanpur

PoWER Ambassadors: Successful and renowned alumni and personalities who will act as brand ambassadors of PoWER

SIIC: A platform at IIT Kanpur to promote entrepreneurship

1. PROJECT INTRODUCTION

PoWER stands for *Promotion of Work Experience and Research*. The aim of PoWER is to:

- Provide students the opportunity to work on emerging areas of technology through real-life industrial and research projects using novel business models.
- Promote skill building process of students by integrating the work of different clubs, societies and independent groups.

PoWER will be a student-establishment having participation from faculty, students, alumni, industries and other organizations. It will involve students to work on projects offered by the faculty, industry, alumni and other organizations. PoWER also aims to create future leaders and entrepreneurs by promoting innovative ideas brought by students and helping students to further develop on those ideas through the support of industries, alumni and government bodies. For skill-building in students, PoWER will coordinate with dedicated students of PhDs, PGs, and UGs to share their knowledge and expertise with the ones interested in learning those.

1.1 MISSION AND VISION OF POWER

PoWER envisions creating an environment for innovation and promotion of research by providing opportunity to students of IIT Kanpur to work on projects offered by industries, research institutes, government bodies and other organizations on year-round basis. Companies, institutes and organizations who choose to be part of PoWER can float projects at any point of time according to their needs and thus access the state-of-the-art facilities and the intellectual capital of IIT Kanpur.

Goals and Objectives:

PoWER has following goals and objectives:

- To promote student-industry relationship and give students the opportunity to interact with external agencies in solving industrial / economic / managerial /social problems.
- Promote skill building process with freedom of selection, innovation and interest-based convergence.
- Promote student-student interaction and networks within and outside IIT.

- Promote faculty-student interaction by providing opportunities for students to share the experience and knowledge base of faculty while doing industrial projects.
- Help in building techno-managerial skills of students.

2. PRESENT SCENARIO IN IIT KANPUR AND POSITION OF PoWER

We perceive very limited role of students in the overall profile of the Institute. For example,

1. Limited platforms for interest-based convergence
2. Negligible horizontal vertical relationships (bonding)
3. Limited participation of students in technology creation and application developments
4. Limited non-academic platforms for leaning and building expertise in various technical and managerial skills.
5. Negligible ways for idea sharing and implementation.
6. Negligible industrial participation in creating work-experience opportunities for students. We have internship program in 3rd year but that is of very short duration and has limited domain.
7. We do not have a system which channelizes students' expertise in solving existing industrial problems.

Previous attempts at addressing these limitations have given rise to informal groups, examples of which are listed below:

Clubs: Different clubs have been established for interest-based convergence where students can learn and do a lot of things. But since every year there is a new batch, the focus shifts to repetition of club activities. Due to this repetition, participation of senior UG or PG students is negligible. Also clubs represent only few fields and their activities are so basic and generalized that there is structural inhibition of research, innovation and output of industrial accreditation. They do not have accessibilities to labs, lack comprehensive funding, round the year activities and required exposure. Since they do not provide a complete solution, we need a better strategy.

New solution:

1. We need platforms for skill development
2. We need platform for providing work-experience to students and involving students in solving existing industrial problems.
3. We need channel for marketing the solutions/skills of students in a proper way so that they can get maximum benefits.

All these issues are satisfactorily addressed by PoWER.

2.1 Position of PoWER with existing platforms:

PoWER can be easily coordinated with existing platforms. Since clubs have generalized domain so they will be the major actors in skill-building measures in many of the areas, especially targeting 1st and 2nd year students. In areas other than those represented clubs, PoWER will have arrangements with the help of senior UG and PG students.

Students will select their own area for doing projects. However, for observation purpose, a survey named *SAFAI*, Survey About Freshman Academic Interests will be conducted for 1st year students right in the beginning of their second semester. The statistics of this survey will be used for designing projects for them.

3. PROGRAMS AND ACTIVITIES

- Skill-building measures through clubs and skill-building groups.
- Create interest-based groups in those areas where there are huge demands of skilled work force.
- Channelize ideas put by students.
- Channelize projects offered by faculties through PoWER.
- Interact with industries, organizations and alumni to spread the idea of PoWER and get research, industrial and other projects for students of IIT Kanpur. After getting projects select students of required skills, form their target-oriented-groups and coordinate them.
- Promote different techno-managerial skills through different teams and councils under PoWER.

PoWER will coordinate with academics so that after its successful establishment, credits could be given for PoWER projects. Mode of multidisciplinary projects also having participation of different institutions is subjected to evolve.

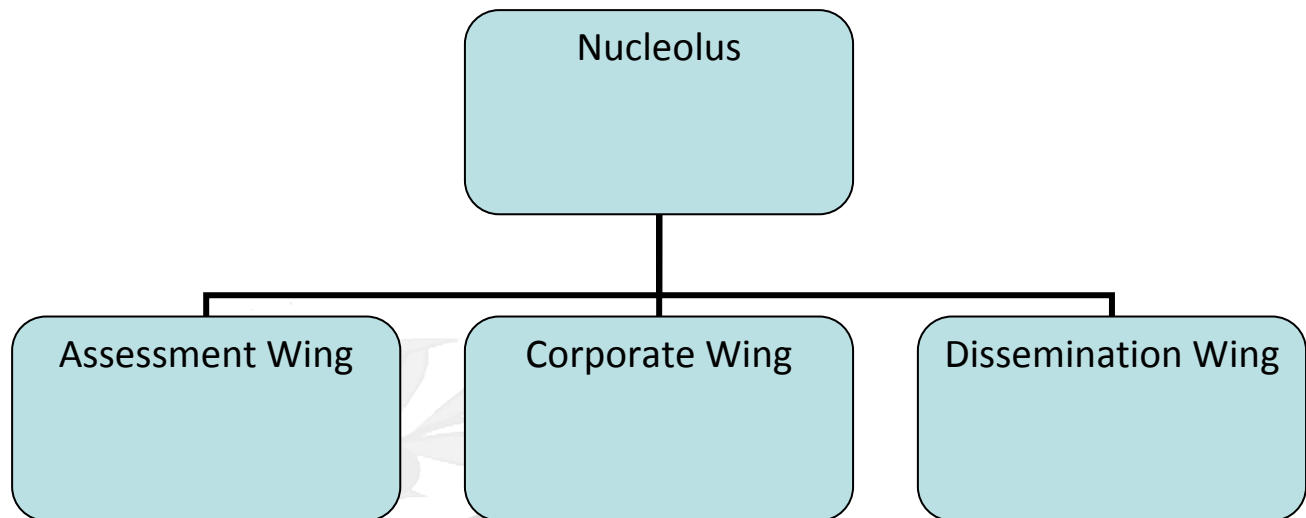
With our initial effort, we are already having some interest-based groups being coordinated by PoWER. With the interface of PoWER, any firm can float projects on year-round basis according to its needs and can thus access the state-of-the-art facilities and the intellectual capital of IIT Kanpur. Firms can provide resources in terms of sponsorship, equipments and other inputs which will be used in carrying out their projects. Firms can also organize workshops, seminars and lecture series and update students about their activities and area of their work. All these things will go in building long term relationships between IITK and industries.

4. OPERATIONAL STRUCTURE

PoWER will be managed by a body called *Nucleus* having four important wings to manage its activities.

1. Assessment Wing
2. Corporate Wing
3. Dissemination Wing
4. Nucleolus

Nucleolus will be the topmost body of *Nucleus*.



The functioning of various wings will be as follow:

Nucleolus: It is the topmost body which will coordinate with other wings and oversee the functioning of work done by different wings. It will comprise of:

1. DORD (Chairman)
2. Convener, Institute Research and Development Committee
3. Faculty Advisor
4. Faculty Advisor
5. DRPG Nominee (alumni representative)
6. SIIC Nominee
7. DOSA Nominee (General Secretary Science and Technology Council)
8. President KoMent (Council of Mentors)
9. President KoRep (Council of Representatives)
10. Representative Corporate Wing
11. Representative Dissemination Wing

Corporate Wing: It will interact with industries, alumni and other institutes and get projects and sponsorship for PoWER. It will have departmental representatives from each batch and from each year who will ensure resource accessibility and participation of students of their departments. Successful alumni and personalities will be PoWER Ambassadors who will advertise it and help it to become a popular body among industries and outside agencies.

Assessment Wing: It is the pool of experts from different fields. They will mentor different skill-building as well as real-life projects with the help of faculty. This wing will also assess the viability and requirements of a project put by a student or sponsored by any agency. Based on the recommendations of this wing, the project will be accepted, advertised, mentors and interested students will be called and a group will be formed. Every group will be autonomous and led by a group representative. To address the issues and provide platforms to promote youths to become future technology and business leaders,

there are two councils KoMent and KoRep for mentors and group representatives respectively. These councils will be led by presidents elected from among the members.

Dissemination Wing: This wing will disseminate information about various projects and knowledge created/accumulated under POWER through posters, websites publications and outside media-contact.

5. TYPES OF PROJECTS:

Broadly the projects under PoWER will be categorized under two types:

5.1 Projects offered by faculty/individual mentors/independent groups/laboratories/clubs/ departmental associations (societies):

The projects offered by different labs/clubs/departmental associations (or societies)/ faculties/ individual mentors/independent groups will not have problems of assessment as they already have experts with them. They will be advertised through the dissemination wing and a Target Oriented Group (TOG) of interested/eligible students will be formed. Since the project is floated by labs/clubs /departmental associations (or societies)/ faculties/ individual mentors/independent groups, so they will take care of mentorship. PoWER will help them to get participation, advertisement, resource inflows, maintaining continuity, and collaboration with outside agencies (firms/organizations/institutes). Resource channelization is very complex in itself and solution to every project will be case-specific.

5.2 Projects/ ideas from industries/other institutions/organizations to students:

- *Assessment:* The project will be assessed by experts (generally faculties and PGs) of the subject matter for the required resources including intelligence, technological and financial will be assessed.
- *MoU:* After assessment from the experts, Nucleus will sign a MoU with the particular firm/Institute/Organization. All the issues of funding, deliverables, duration, and other specifications will be explicitly mentioned in the MoU. IPR experts of IITK are preparing the whole structure of MoU.
- *Implementation:* The project will be advertised, students will be invited to join them; the selection process will be case-specific. The interested students will form a *target-oriented group* (TOG). It will be *autonomous* and will be *directly associated* with the project sponsors.
- *Mentorship and monitoring:* A TOG will be mentored by PoWER-Mentors and they are free to take help of any faculty or access any facility in consent of the concerned lab. In case of non-availability of any expert, sponsoring/collaborating firm/institute/ organization will be sought for help. Every TOG will have a group representative selected by PoWER to manage the activities of that group.
- *Continuity:* Nucleus will abide by the terms and conditions of the MoU and consequently the groups.

Group: A group is an autonomous body comprising people either having similar interests or working on a common project.

Formation: Students are free to make groups of their own. To receive resources and accessibilities from PoWER, they will have to register in a given format and abide the ethics defined for them. For now, it is subjected to evolution.

Target Oriented Group (TOG): For any sponsored/time-bound project, a group will be formed after selection of students for that project, called Target Oriented Group TOG. Selection process will be case-specific. After formation, the group will abide the terms and conditions of the project. Every group will have a representative who will coordinate the group and will act as an interface between a group and PoWER. A group may or may not have any mentor. The selection of group representative will be done by the group members and PoWER will not interfere in routine activities until or unless the group could not fulfill requirements specified in the project targets assigned to it.

IPR Issues and MoU: IPR issues and the contents of MoU are under evolution and institute IPR head and IPR chair of MHRD Dr A K Mittal is mentoring it.

5.3 Common guidelines for a TOG or a group and its members:

- There must be complete documentation of every work of the project including challenges faced and how they were solved.
- Every group/TOG needs to submit periodic (preferably fortnightly) progress reports.
- Members of a group must not have SPI less than 5 once (s)he joins a group.
- Members facing academic probation or academic warning will be discontinued from the group until he gets a SPI more than or equal to 5.
- Every student will have to submit an understanding before joining any project. (S)He can't leave the project irrationally. Terms and conditions will be subjected to evolve.

KoMent: KoMent is the council of mentors. It will have experts (post doctoral, PhD scholars, M-Techs, MBAs, senior UGs and mentors of all existing projects and groups) from all major streams of sciences, engineering and management. It will have a president and a vice-president elected from among the mentors, who will represent it. However, expert from a particular stream will have his/her independent and decisive say in issues related to his/her stream. All project ideas or problem statements will be put to KoMent for assessment of resources required, time duration and other estimations before launching it as a formal PoWER-Project. It will also look into the possible areas where we need to start work. Overall, it is a platform for future technology leaders of India and World.

KoRep: KoRep is the council of group representatives. All group representatives will be its members. It will address the common issues of project management. It will also have a president and a vice-president elected from among members.

There will be several teams under different wings and PoWER will select students for them.

6. FINANCIAL SUPPORT AND MANAGEMENT

6.1 *Source of finance:*

PoWER will need financial support from Students Gymkhana in the form of some initial seed money to start its activities. Thereafter, it will get financial support from following sources:

- Companies will sponsor their projects
- Our Alumni
- Department of Science and technology (DST)
- SIIC
- Deans' Student Fund
- Students' Gymkhana (Science and Technology Council)

6.2 *Management of finance:*

Management of finance for projects will be handled by Nucleolus.

A TOG will be provided with initial resources to start projects. Payment for a sponsored project will be done in stages based on project status and final payment will depend upon the acceptance of projects by sponsoring companies.

Funds provided to a group will depend on its requirements and past records. Different allowances like TA, registration charges* will be also provided as per the valid explanations.

7. END NOTES

All student representatives are aware of the necessity of such type of platforms in Indian educational institutes. It is the first step of its kind to address the problem in an integrated way. IIT Kanpur is an institute which has actively promoted students to take decisions for their welfare through the platform of Students' Senate. This proposal is being put to the Senate for discussion and improvement in the integration of idea and its implementation. All members of senate are expected to contribute to evolution of this idea so that we can set an example for other institutes to follow.

Thanks and regards

Team PoWER