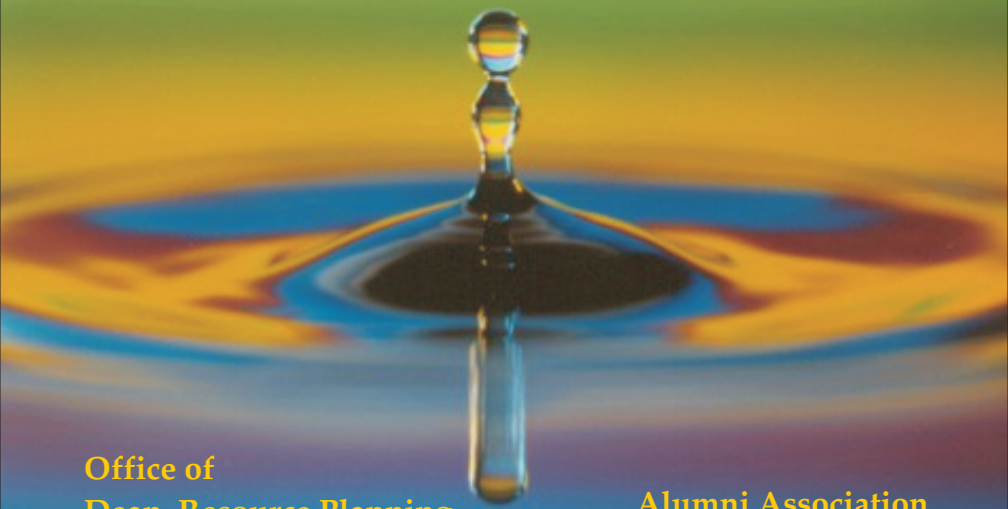
Office, Dean
Research & Development

PoWER

Promotion of Work Experience and Research

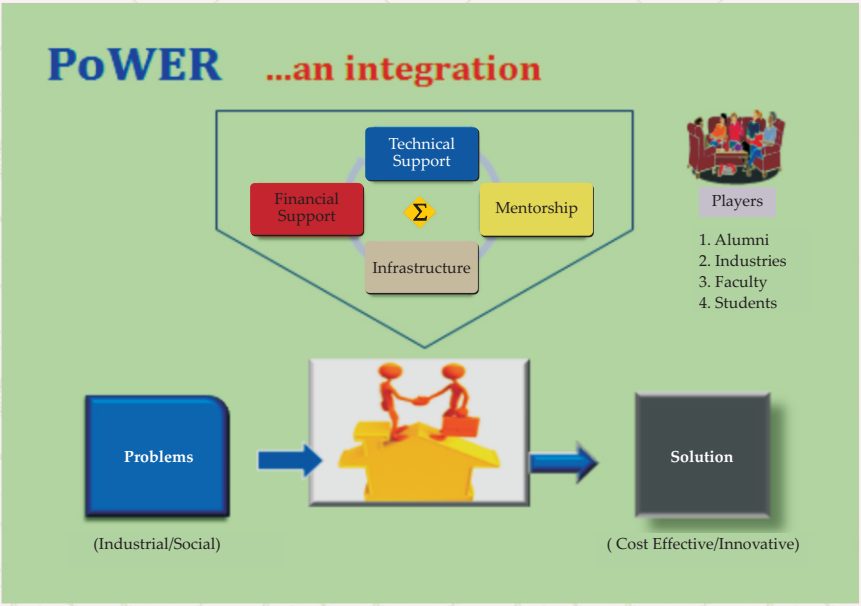


Office of
Dean, Resource Planning
and Generation

Alumni Association
IIT Kanpur

PoWER ....an Idea

A Work-Experience and Research Platform Comprising Students, Faculty, Alumni, Researchers within the Institutes and Outside Agencies Working Together Providing Students Freedom, Resources, Opportunities, Incentives and Mentorship to become Innovators and Future Leaders by Solving our Industrial and National Challenges.



PoWER is a type of Junior Enterprise. Junior enterprises are student bodies which promote and coordinate student research. They help students to add values and real-life skills; equip them for current and future leadership challenges; engage them in solving some of the industrial and social problems which they can; and provide them guidance, mentorship and networking so that they can pursue their interests freely and become future leaders. They involve active participation of universities, alumni and outside agencies.

PoWER as an ORGANIZATION

Nucleolus

Work: Administrative head of PoWER
Members: Dean R&D, IRDC Convener, SIIC Coordinator, Representative Alumni Association, Student Coordinators

Assessment Wing

Teams: KoMent (Council of Mentors), KoRep (Council of Representatives)
Members: Faculty, Alumni, Students and Technical individuals

Corporate Wing

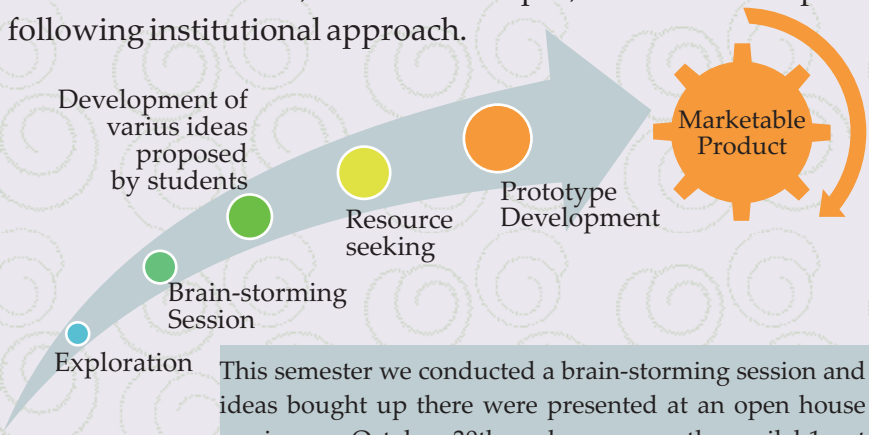
Work: Corporate Management
Teams: Alumni Interaction, Industry Relation, Resource Generation

Dissemination Wing

Work: Dissemination of Information, Public Relation, Feedback generation
Teams: Web team, Publication team

Student Ideas

Many a times, while at IIT Kanpur, you might had came up with some idea and many of you might not had got correct institutional support to convert it into a result. PoWER, through its program to promote student ideas provides an opportunity for student to develop their ideas. To develop a culture of innovation, here at IIT Kanpur, we have developed following institutional approach.



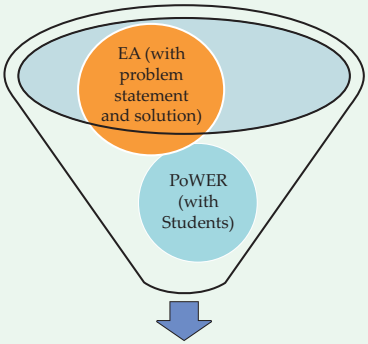
This semester we conducted a brain-storming session and ideas bought up there were presented at an open house session on October 30th and are currently availab1e at http://www.iitk.ac.in/dord/power/IdeaBank/OpenHouse/

Some Student Ideas

- Immersive 3D Audio Video Realization
- Sustainable Community Solutions
- Local formation stem for Delhi
- Semi-Autonomous UAV
- Orange Rinds
- GlucoBand
- Cycle of Exhaustion
- 3D Motion Analyzer
- Catching on the Vapors
- Observatory for Amateur Astronomical Research
- Classification of Irregularly Spaced Three Dimension points procured by Terrestrial or Airborne Laser Scanners by using Mathematical methods of Modeling Human Behavior

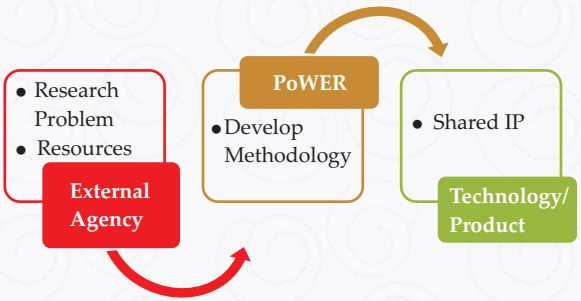
Work-Experience Projects

Many times a company wants to outsource its work, this program provide them an opportunity to involve students of IIT Kanpur at such projects. The company or external agency will provide the problem statement and the kinds of solution they need, while IIT Kanpur will provide human capital to complete the project. These projects help student gain work-experience as well an industrial exposure.



Research Projects

In these projects External Agency will provide the field of work, expected problem and potential research outputs and required resources. The methodology and approach to the problem will be researched and developed by PoWER. These projects will provide students an opportunity to develop further in the realm of the area in concern. IP generated will be shared by researchers from team PoWER and the funding agency.



Project Engagements

Convergence:

This is a concept of bringing down the like minded people and providing them support to do some research or develop some technology through mutual sharing of ideas and discussions.

Group for Environment and Energy Engineering
Thrust Area: Photo-voltaic, Gassifiers, Energy Efficiency
Achievements: Energy Audit of hostels, Solar Lab in RAC lab of Mechanical Deptt.

Young Engineers

Group on ICT
Thrust Area: Mobile Applications, Web-Applications, Linux, Embedded systems
Achievements: Developed few mobile applications, a library system and few intresting websites.

Challenges we are facing

Problem identification & modeling: Incomplete real-world exposure, lack of expertise and absence of moderation lead to futile efforts and sometimes students loose interest. Regular real-world exposure and moderation of area-specific problem identification by alumni and faculty through various incentives will retain many students and further attract students of diverse interests.

Solution identification & modeling: Incomplete information about availability of resources, expertise and exposure lead to incomplete results. Participation of alumni and faculty will again improve the situation.

Resource acquisition: Industries are still not having the confidence in the abilities of students, hence they do not bank on them. Also, student endeavors which are neither entrepreneurial ideas nor have any industrial application does not get any support. In both of the cases, students suffer but nation suffers more. Industries and society must understand that investing on student endeavor is an investment on secure and better future and hence they share this responsibility along with students.

Experimentation/prototype development: It is a first time experience for most of the students, so there are high attrition rates and low retention rates. Few success stories will definitely build everyone's confidence.

Monitoring and coordination: Participation of sponsors in monitoring will bring a time-boundedness and a professionalism.

Accreditation and incentives: Proper accreditation will increase student participation.

PoWER as an ORGANIZATION

Abhyast:

- Collaboration with Boeing
- Autonomous Navigation Vehicle
- Team: 8 students

ICARUS

- Indian Conference for Academic Research by Undergraduate Students
- March 26-28, 2010, IIT Kanpur

Nano Satelite (Jugnu):

34 cm x 10 cm x 10 cm, (weight <3 Kg)
50 students, 14 faculty, 5 project associates

NERD

- Notes on Engineering Research & Development
- Quarterly Student Magazine
- Language that can be understood by people from any department

Lunar Rover

- Prototype for rover to be sent with Chandrayan-2
- Partnership with Vikram Sarabhai Space Centre

Interaction with the real world

Industry-Academia Meet (student's perspective) IIT Kanpur, February 21st, 2009

In an effort to develop local innovation ecosystem in Kanpur with IIT Kanpur and local industries actively participating in the process of technology development; we tried to bring together the representatives from Kanpur industry and students. Slowly, we are progressing towards developing a synergy with local industries at Kanpur aimed at resurging Kanpur as a major industrial hub in India.

Meeting with garment and apparel sector industries, Kanpur Region

Following up the developments from the meet we participated in a meeting of local industrialists in garment and apparel sector and tried to understand their challenges.

Technocracy @ IIT Delhi

To serve the strong need of a link for free exchange of ideas and knowledge sharing among different IITs, efforts are being made to start student organizations like PoWER there. This resulted in Technocracy, a student body similar to PoWER at IIT Delhi. We are in conversation with other IITs and Universities like JNU.

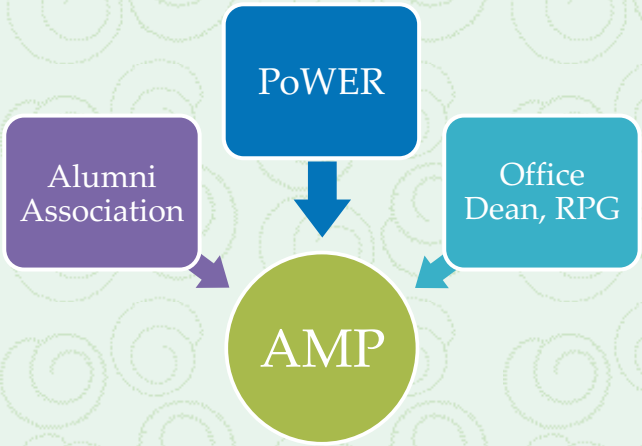
Industry-Academia Meet (student's perspective) IIT Delhi ,November 7th, 2009

To present our perspective to external world and to know what they expect from IITs, we organized an Industry-Academia meet at IIT Delhi, with help of Technocracy. Many industries from NCR region participated in the event.

Different meetings and conferences

Team PoWER represented IITK students at various conferences on industry-academia interaction, defence research, energy etc. and held meetings with different industries, government bodies and research centres for accepting students as an important partner in innovation.

Coming Programs: Alumni Mentorship Program



It will provide a wonderful opportunity to students to work on projects offered by alumni and agencies, counseling and mentorship of students based on their interests and requirements, joint participation of students and alumni in technology creation and application development. It aims to create future leaders by promoting innovative ideas brought by students and helping them to further develop these by the guidance of alumni. PoWER and Student's Gymkhana will coordinate the program.

Innovation Database (ID): ID will contain the technical profile of all students, faculty, alumni, researchers within the institute and outside agencies. It will help in networking, mentorship and grouping of like minded people.

A website has been created http://iitkmentor.chronus.com/about/ for participants to fill in their technical CVs. Through this website, mentors and students are invited to join the program anytime of the year through its website. Every month the program administrator will find suitable matches from available data and provide the details of the student to prospective mentor. On accepting the student the mentor will contact the student. The student would respond back.

Alumni Project Engagements

Alumni Start-up Engagements (ASE): Alumni Start-up Engagements (ASE) will be a program through which start-ups by IITK Alumni can engage IITK students in their projects. Any Alumni Start-up will be accepted as a start-up up to period of 5 years from the date of registration of the firm.

Alumni Enterprise Engagements (AEE): Alumni Enterprise Engagements (AEE) will be a program through which Enterprises by IITK Alumni can engage IITK students in their projects. Any Alumni Start-up will be accepted as an established enterprise after 5 years from the date of registration of the participating enterprise.

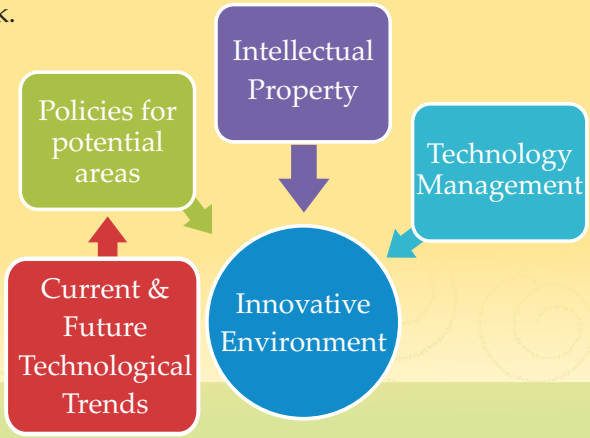
Alumni Organization Engagements (AOE): Alumni will bring the organization for which he/she is working to give projects to PoWER.

Individual Alumni Engagement (IAE):

It will provide an opportunity for an alumnus to lead a group of students to carry out a Technology Development/Research project, while he has not enough time to spend upon it. Currently we are in process of finalizing a similar project with an individual (not an alumnus) of UK.

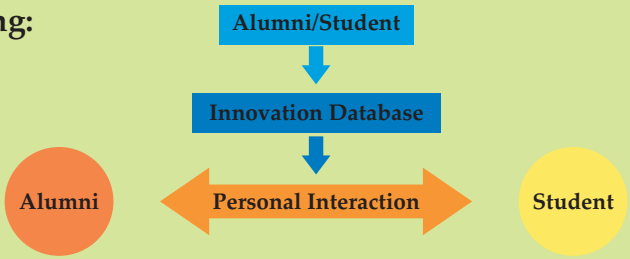
Innovation & Technology Management

PoWER has a concept of Area Representative (A-Rep) and Council of Mentors (KoMent) [Explained later] to achieve the following framework.



Mentorship, Technical Counseling & Networking

Mapping:



This program will require all interested to create their profile and mentors will be assigned in the manner described earlier.

Thesis/Project Counseling:

Most of the M-Tech Thesis, PhD thesis, B-Tech Projects and course projects are seriously done and have potential real-world application, but most of them end up without connecting them to the real world applications. Thesis/project counseling is aimed to help students to develop applications of their endeavor.

CRUX: Compete against yourself

CRUX of a problem/idea/process is its most important, interesting, and rate-determining part which drives one for innovation and endeavor. Solving CRUX either solves the problem or makes the difference one intends to implement.

PoWER brings it out as CRUX-1 and CRUX-2.

CRUX-1

(Intra-IITK)

- Student: Propose, Defend and Solve
- Help: Faculty, Alumni or Industry

CRUX-2

(Open to all)

- Industry: Offers problem
- Student: Propose, Defend and Solve
- Help: Faculty, Alumni or Industry

Example: A first year student proposed catching on vapors and our team in IIT Delhi is working on a problem offered by bread making company, Harvest Gold.

Catching on the Vapors

- Problem: Fuel loss while refueling due to volatility of fuel
- CRUX proposed: Smarter design of the fuel tank

Harvest Gold

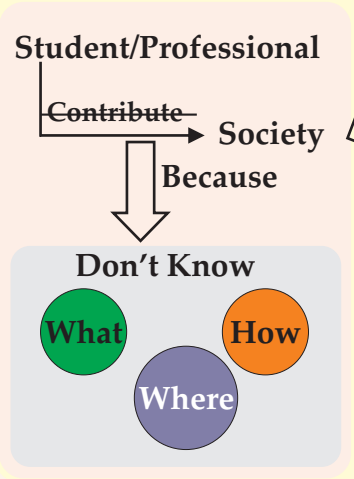
- Problem: Breaking of a lot of breads while transporting
- CRUX proposed: Smarter method for carrying the crates

Benefits

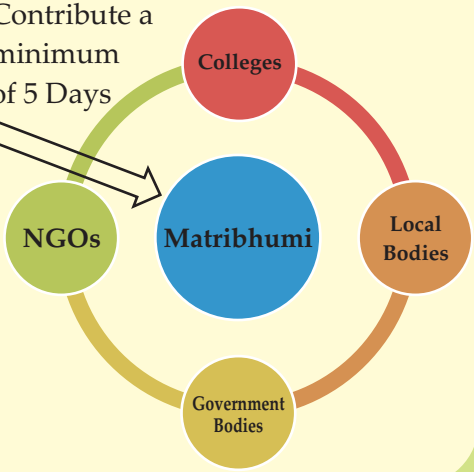
- Preserve Interest and Challange
- Saves Time and Resources
- Importance of Problem Identification

Some Social Initiatives

मातृभूमि Matribhumi



Contribute a minimum of 5 Days

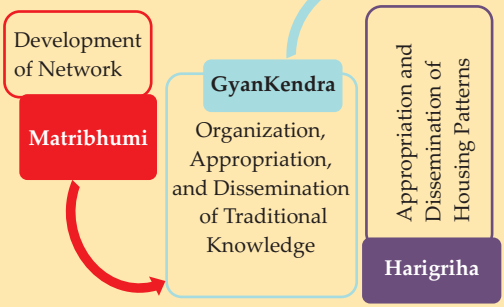


हहह्ह (Harigriha):

Under this program, we will be promoting different ecological regions of the country to have their own houses made from local design, construction material, and workforce. It will be implemented by integrating the qualities of current and traditional techniques and building material. Its importance is clearly visible in context of climate change, dwindling natural resources, unavailability of houses for a substantial population, and inefficiency in compensation given to people negatively affected by mining and pollution done through many of the modern methods.

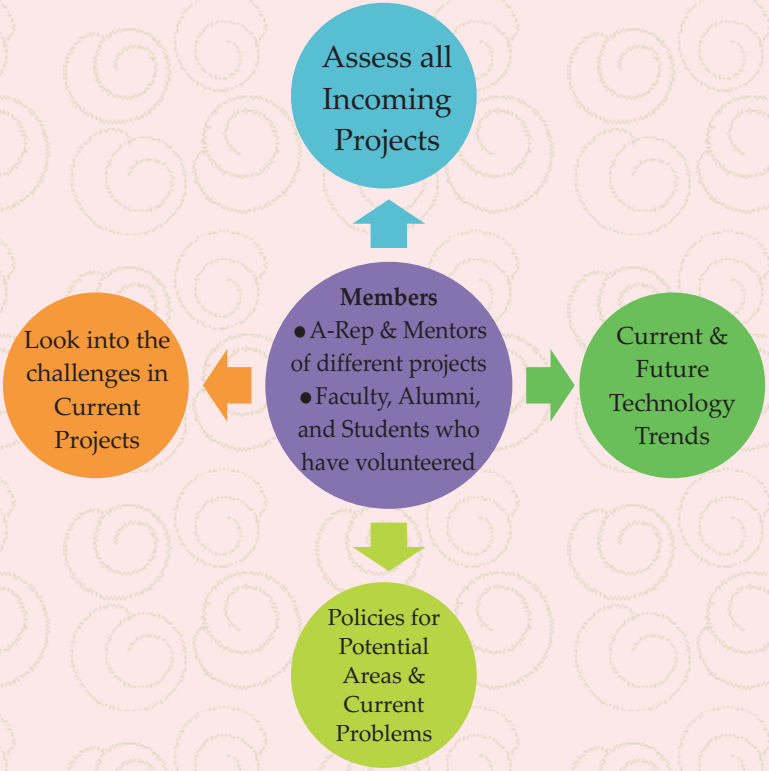
ज्ञानकेन्द्र (GyanKendra)

Implementation



How to Contribute

Council of Mentors (KoMent)



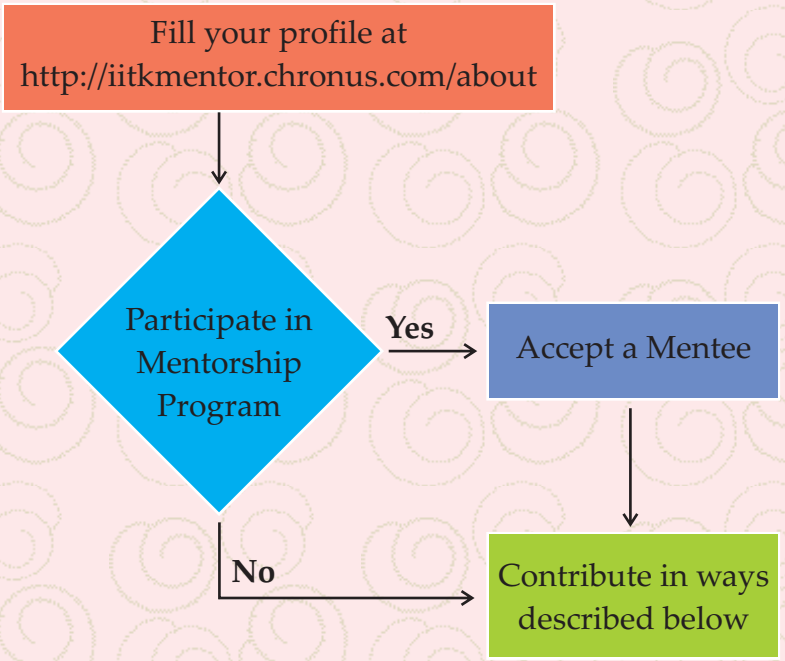
Area Representative (A-Rep)

Help the Corporate Wing to contact External Agencies in your Area

Help in Mentoring the Projects in your Area

Envisions the Future Technology Trends of your Area

How to Contribute



PoWER, an effort to build Local Innovation System by focusing on Industry-Academia Interaction, Synergy between IITs and other colleges, and Appropriate Technology in order to shape India of tomorrow.

PoWER (Promotion of Work Experience & Research)
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