A Vision and Model to Create an Eco System for Fostering Entrepreneurship @ IIT Bhubaneswar

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From premier institutes including IIT Bhubaneswar, it is desirable that many technologies and processes are spun off from own research endeavours. Forward looking institutions which are concerned about contributing towards prosperity of the nation encourage technology spinning off and creation of startups from students and faculty. Globally, there are several success stories of university research maturing into initiation of companies which later grew to multinational level contributing significantly to creating employment and prosperity of nations. It is desirable that IIT Bhubaneswar takes some significant steps in this direction, at this juncture. While this model and echo system are being proposed for fostering entrepreneurship at IIT Bhubaneswar, the same is applicable for any other institution in general. Parts of this model were proposed by me and applied successfully in my earlier institutional/university building assignment. This is also in tune with the '*Start-up India'* clarion call given by the hon'ble Prime Minister of India.

The Proposed Model:

Students from a technology institution, take up careers typically in research, research & development, education, manufacturing, software, IT, technical and general executive positions. The percentage of them taking up entrepreneurship is very negligible if not zero. In order to fulfil the aspirations of the 1.25 billion Indians majority of whom still live in rural areas, we need to encourage our students and faculty to take up entrepreneurship in significant numbers and see that the opportunities in several fields including manufacturing, service industry and technologies for the rural sector are exploited, a healthy growth takes place and prosperity is achieved. This would also very significantly avert the current situation of stagnant and inadequate employment opportunities. That is, while providing world class holistic education, inculcating and promoting research culture, providing opportunity for well-rounded personality building and growth, we need to create encourage entrepreneurship and create job creators. In order to realize the same, it is desirable that we create a right eco systems wherein some students come forward to pursue entrepreneurial careers with a fraction of the faculty members joining hands as entrepreneurs.

A spirited implementation of an approach involving the following steps can significantly and effectively help in inculcating the entrepreneurship culture and realizing the above dream:

1. Motivating students and faculty to take up entrepreneurship.
2. Driving the culture of creativity and innovation in almost all engineering courses including theory and practice.

3. Providing opportunities for a student and faculty member to carry on his/her creative and innovative pursuits anywhere on campus including in all laboratories.
4. Providing opportunities to incubate technologies on the campus.
5. Offering breadth courses that help entrepreneurship and innovation.
6. Providing access and facilitating enterprise mentoring, angel and venture funding.
7. Creating a Science & Technology Entrepreneurship Park (STEP) within the campus.

It may be noted that Items 2 and 3 are prerequisites for many careers and especially for research and design careers, an important option for engineering graduates and every institution must promote by default.

Realization of the Model:

The model and vision can be realized in practice. Item-1 (motivating students to take up entrepreneurship), can be implemented by the Schools, faculty, motivational lectures organized from Schools, Gymkhana, Design and Innovation Center (DIC) and others. Item-2 (creative and innovation culture) can be realized mainly through the academics of the institute and also by creating an innovation center in the campus. The role of a faculty member is very crucial in this endeavor. Teaching, the laboratory experiments, assignments, mini-projects and even the examination should be fostering creativity and innovation. An innovation center can play a very important role in triggering creativity and innovation attitude.

Item-3 (opportunity to build and create gadgets, processes and to test them) can also be realized through an innovation center on campus and also by making every laboratory of the institute itself to serve as a platform for trying ones ideas and to innovate. Items 3 and 4 (providing incubation facilities) can be implemented by creating on campus technology incubation facilities and associated policy frame work. Item-5 (offering courses relevant helpful in establishing and running enterprises) can be realized by creating Breadth courses like Entrepreneurship and Small Ventures. While item-6 (mentoring and venture funding opportunity creation) can be realized through the general means of banks and venture capitalists, in the case of students creating and facilitating funding through the means of government initiatives, angel funding and endowment creation with the support of industries, confederations of industry and Corporate Social Responsibility funding would greatly help. Similar opportunities can also be extended to faculty members. It is essential to create a STEP at least of medium size to start with, to support small ventures.

Technology Incubation Facility and Associated Policy:

It is being proposed to start Technology Incubators at IIT Bhubaneswar to facilitate the graduating/just graduated students to carry on research and development activity towards prototype and product development and innovative business plan development and implementation. Through the incubators, the following facilities may be provided to its immediate graduates who enroll as entrepreneurs in singles or teams and for a period of up to 2 years, to start with:

- Limited office and work space in the premises of the campus including laboratories, free of cost.

- Institutional services such as Internet facility, electricity and water free of cost in the limited office and laboratory space, provided.

- To make available the facilities of the institute for carrying out any product/prototype/technology development on campus including consumables limited to certain amount. This amount may be limited to Rs 1.00 Lakh to start with and the same may be reviewed time to time. However, beyond this limit, any expensive consumables are to be borne by the entrepreneur or entrepreneur team per annum on loan or in kind. The institute may waive off the loan when the prototype is not taken out by the entrepreneur. The institute will put the prototypes developed in the incubators on exhibition. The laboratory-in-charge and the registered entrepreneur would both maintain the inventory of the consumables. An entrepreneur would be attached to one mother School/Department, while he/she can avail the facilities of the institute in more than one facility.

- An entrepreneur or entrepreneur team has to arrange for their accommodation and living by themselves. Very selectively, if available they my avail institute accommodation and catering services on payment.

- Head of the School to which an entrepreneur is attached would be monitoring and controlling the activity of the student working in the laboratory with the help of the laboratory-in-charge.

The facility is exclusively for the students and faculty of the institute. By virtue of their position, faculty members of the institute are entitled for some of these facilities automatically. The prototyping facilities too can be extended to faculty members. The institute will build an entrepreneurship park subsequently with space available to further facilitate startups. After a reasonable success in building a prototype in the incubator, an entrepreneur may shift to the entrepreneurship park on payment of a relevant fee, at an appropriate time for further steps in creating a startup.

Intellectual Property Rights (IPR): The IPR issues of the incubator would be governed by the IPR policy of the Institute. Presently, any IP generated by the faculty and staff of the institute would belong to the institute. Any IP generated by students or enrolled entrepreneurs, involving Institute facilities or funding directly or indirectly also belongs to the institute. Any IP earnings that result out of marketing the IP or by technology transfer would be shared at (50:50) between the institute and the inventor or inventor team. However, the institute may assign the IP to the inventor or inventor team, exclusive rights for own use for entrepreneurship activity, free of charge or at a premium defined by the IPR Policy of the Institute. It is the responsibility of the inventor including the enrolled entrepreneurs to disclose the invention to the institute (E-Cell of the institute in the present instance). The institute cannot be held responsible for any violations by the enrolled entrepreneur.

Relevant Courses:

Typical engineering curricula have provision for introducing Breadth courses. Introduction of a few courses relevant for a budding or would be entrepreneur or an enthusiast would greatly help in supporting the activity and in creating the echo system. To name two very relevant courses which may be offered as Breadth courses to all branches of Engineering and Sciences include the following:

- Entrepreneurship and Small Ventures
- Technology innovation cases
- Small Business management

The former may be aimed at helping on how to start ventures includingan introduction to entrepreneurship, understanding entrepreneurial process, financing of ventures, valuation of companies, management of ventures and can help providing the required knowledge. Inclusion of a business plan and motivational lectures (and success stories) and making these a part of the course, may significantly help. One way to foster innovation is to provide an opportunity for a student to go through innovation case studies and make him/her appreciate the same. Internships in startups may considerably help too. This can be made possible by providing lectures and hands on practice on a few innovation cases selectively taken based on one's own interest and field of study. The lectures may consist of a brief Introduction, a description of the function of the product or equipment, design, production and marketing aspects and economics of feasibility. The supporting laboratory facility should include the innovation cases for demonstration and study.

There can be other courses which may include courses on management or aspects of management like marketing and finance.

Funding Opportunities and Mentoring:

The students who register as entrepreneurs are expected to arrange their funding on their own by tapping resources such as the following:

- Loans from banks
- Own resources
- Venture funding
- Angel investment
  Eg: The Billion Dollar Babies initiative of The Indus Entrepreneurs (TIE)(The program aims to help select Indian product startups reach $1 billion in global enterprise value through this ambitious initiative that promises to leverage the reach and resources of TiE Silicon Valley).
- Other funding resources

The institute would put its efforts to bring together the entrepreneurs and the agencies that provide funding to new ventures including the angel funding opportunities. The

institute would put in efforts to provide mentor support from volunteering faculty and angel mentors from outside, to the entrepreneurs who wish to avail the support. The institute would also put in efforts to create selective angel funding and mentoring support from government, agencies like CII and FICCI and industries like Microsoft. The first efforts already put from my office in this direction are yielding encouraging results.

Research and Entrepreneurship Park (REP):

Establishing a Research Park or Science & Technology Entrepreneurs' park or Research and Entrepreneurship Park (REP) is one important step which may facilitate spinning off of companies. This kind of park would not only help the student and faculty entrepreneurs of the institute, but also the budding entrepreneurs as well as established companies to avail the facilities. It would facilitate creation of startups in a big way. There is a need for exploring such opportunities, submitting a full and concrete proposal and work for establishing a REP.

Already the first version of a proposal for establishing an REP at IIT Bhubaneswar for submission to the MHRD is ready. REP is going to have opportunities for boundless entrepreneurship which can foster multidisciplinary and any discipline creations while housing sub-parks supporting ICT, Electronic, Machine, Rural technology, Metal & Material, Infrastructure and education related innovations, incubation and product developments.

Innovation Center:

A somewhat related initiative that can culminate into entrepreneurship is to create an innovation center and to infuse creative and innovation culture among students. IIT Bhubaneswar started a Design Innovation Center (DIC) with the support of MHRD. There is yet another initiative being taken with the Government of Odisha, which is aimed at driving innovations in building materials area. We need to expedite actions on these.

While some such facilities may be created to specially facilitate execution of student projects, every laboratory of the campus and the whole campus should facilitate and serve as an innovation center. While all the laboratories of the institute foster and support innovation, a few of the laboratories and DIC will be open round the clock for students to work at their convenience. An innovation center with a large variety of gadgets, components, consumables, implements, software and hardware tools, which is going to be open round the clock is going to be initiated in the permanent campus very soon. Students can build, tinker, engineer, do value addition and try out their technology related creative pursuits.

Facilitating Mentoring and Funding Opportunities:

There are opportunities existing for funding startups and for technology incubation. Such facilities include venture and angel funding, bank loans, government initiatives and similar

other opportunities. Usually, it may be difficult for a student to avail such funding opportunities in view of the need for sureties. However, when it is institutionalized through an eco-system such as the one proposed here, funding availability and possibilities may be significantly enhanced. Apart from financial support, the young entrepreneurs need advice and mentoring support from senior entrepreneurs. Some initiatives have already been initiated in this direction.

Opportunities from Confederations of industry, funding from companies under their Corporate Social Responsibility and funding opportunities from Alumni of the institute and other IITs may be tapped for supporting the students and faculty to establish startups. The institute need to explore and establish joint mechanisms through which such financial support can be accessed by a registered entrepreneurs. Similarly, the institute may create and provide mentoring support including advising, guidance and monitoring. Volunteering senior entrepreneurs, alumni, faculty and confederations

Entrepreneurship Cell (E-Cell):

The institute may establish an Entrepreneurship cell under the aegis of Dean (R&D) to coordinate the activities of the incubator, facilitate accession of funding opportunities and mentoring setup. A Professor-in-charge (PIC) and a few student coordinators may be officiating the E-Cell activities. Director may appoint the PIC from amongst the senior professors of the institute. The institute may constitute an Advisory committee to help the E-Cell. The student members may be proposed by the Student Gymkhana in consultation with the PIC and submit for the approval of the Director. The institute may have an allocation of finances for the running of the Cell.

The E-Cell shall have the following responsibilities while governing the Incubator:

- Registration of the entrepreneurs, every year.
- Be connected with the venture funding agencies and bring together the agencies and the entrepreneurs.
- Arranging a senior entrepreneur to mentor the entrepreneur, where possible.
- Holding Workshops and arranging motivational lectures from successful entrepreneurs and about opportunities from related agencies.
- Be connected with the venture funding agencies and bring together the agencies and the entrepreneurs.
- Record keeping and presenting the annual report of the cell.

Student entrepreneurs have to apply to the PIC through the Head of the School of the students for enrollment as an entrepreneur. A faculty member of the institute may apply through the Head of the School and Dean (faculty) to the director. To start with the number of students enrolled may be limited to 10% of the student strength and the number of faculty members may be limited to 30%.

Financial Implication: The Technology incubation facility would reflect in the form of a marginal rise in the consumable expenditure. Assuming that an average expenditure per an incubated project at Rs 1.00 – 2.00 lakh to start with and that the maximum of 10% of

the students of the 300 outgoing students, i.e., 30 opt for entrepreneurship with the stay of 1-2 years, the expenditure would be around Rs 60.00 lakh. Provision will be made to entertain needy special cases for a higher level of funding. Also the funding may be revised as demand goes up.

Introduction of courses as a part of Breadth is as it is permitted as per the academic regulations of the institute. There is already a provision for creating a Design and Innovation Center which is essential to foster creativity and innovation among students. Creation of a Research & Entrepreneurship park is expensive and may cost Rs 25.00 to 50.00 Crore, to start with for an effective park.
