

Impacting minds by creating conducive ecosystems!

DISCLAIMER: This is not an all-inclusive essay & is restricted to the entrepreneurship arising out of technological innovations.

The problem, in a line, is that the technology entrepreneurs (or transfer) arising out of our higher-education institutes are virtually non-existent (as true innovation mostly always happen in conjunction with a top technology institute)

The solution, primarily, is the need to foster an innovation-based-entrepreneurial ecosystem across our Institutions of higher learning.

Our socio-cultural environment & education system are the crucial factors resulting in the lack of individualistic thinking (responsible for a person to look at challenges in life, new ideas & market opportunities). By creating an innovation & entrepreneurial ecosystem surrounding our premier technology institutes, we may be able to take care of the missing entrepreneurial triggers (as mentioned in NKC report).

SOCIO-CULTURAL FACTORS –

Thinking pattern: A short survey which Sangeeth Varghese (<http://www.leadcap.net/>) undertook sometime back at the IIMs and their parents (through telephonic interviews) reveals two sides of the story.

a) Parents: For parents the most important aspect about their children is security. And they translate security to working for an established company, which gives access to a steady fat income and hence the “brag factor” among their relatives and neighbors. Middleclass parents think that education is the best insurance and the best way to put that in to use is by working for someone else – the best way to reduce any direct risk on their children.

b) Students: Students who are brought up in the open economy think that entrepreneurship is glamorous, but not for them. For them entrepreneurship is something that need to be taken up only after you have had several years of work experience and huge sums of money backing you up. MBA education is clearly a ladder towards a high paying job in one of the big companies.

EDUCATION SYSTEM –

Here, we look at what needs to be done at an undergraduate level. In the current scenario, students are motivated to work only for things that will help build their CV for a high salaried job, MBA, etc. It is difficult to break this monotony and see people turning up for lectures, workshops & events purely for the love of learning. This is also because, to most of them, the present form of learning appears to be non-exciting, uninviting & far from reality. Moreover, the high-paying jobs happen to be in the non-tech sector.

The proposed solutions aim to draw undergraduates into research, innovation & entrepreneurial settings and are relevant at the University/Institute level (MICRO), but, POLICIES at the highest level (MACRO) are needed to drive us in the direction required.

EFFECTIVE COURSES & TEACHING

Why? - Students unaware of empowerment that engineering/technological education can bring about (Reason why only 16% graduates became entrepreneurs in the field they studied)

=> Courses which facilitate discussion on problems that need solutions, components/designs to address new needs, techniques/approach to bring improvements in existing state of things might be useful to get the students thinking. Basically our courses must try to get them in looking at inventing as a conscious step.

Inspirational teaching & motivating are essential to excite the students about a subject, but, neither does it come naturally to many nor does the qualification required to be a faculty (in our institutes) provide the exposure to make teaching interesting. So, it's very critical to organize short workshops for faculty members on teaching techniques & understanding student psychology.

INDUSTRY PROJECTS

Why? - Most students are unable to see connection between academics & real world

=> The short-term Industry projects (not involving significant amount of basic research) may be carried out by undergraduate students (on suitable stipends) under the guidance of faculty members. Stipends may be a motivation, but this will in turn instill the confidence of carrying out the laboratory testing/analysis.

Also, involving students at discussion level in long-term projects will help them look at the bigger picture & they, in turn, will bring in fresh ideas to the table.

CONCERTED PRACTICAL LEARNING

Why? - The laboratory work does not involve 'experimenting' in the true spirit which may require progress at own pace, through independent methodology without 'fear' or 'success' in the 'experiment'

=> There could be project mode work in place of some of the conventional laboratory courses. Such projects could be wholesome in nature starting from ideas that are easy to absorb, improving every semester till they get implemented in the form of a prototype or an exhibit (which can be showcased to other students/innovators in the region). Such projects may be carried out in teams with a Faculty member as guide & a senior student as mentor. Wherever possible the project may be decided with help of the industry and an industrial mentor may be included to provide guidance to the students.

Further as part of such laboratory, the students must be encouraged to disassemble & assemble simple/discarded gadgets, devices, etc. which help them appreciate the focused & patient efforts needed in development of new products.

The above laboratories can also be directed towards supporting grass-roots innovations in the country through scientific/technological inputs as exemplified by the National Innovation Foundation. Technology students can play a vital role in simplifying day to day lives of people, particularly those living/working under poverty or harsh conditions.

ALL IN ALL AN ATMOSPHERE CONSCIOUSLY NEEDS TO BE CREATED IN ENGINEERING/TECHNOLOGY INSTITUTES WHERE LEARNING DOESN'T HAPPEN JUST BY ATTENDING COURSES & PASSING EXAMS, BUT INSTEAD THERE IS A FLUID ATMOSPHERE WHEREIN STUDENTS GEL WITH THE FACULTY TO WORK ON INNOVATIVE PRODUCTS.

TOURS TO ENTREPRENEURIAL HUBS –

<http://nusea.org/>. It provides opportunities for NUS students to work in high-tech startups in Silicon Valley (and other entrepreneurial hubs) for a year, along with attending entrepreneurial courses at Stanford. Such tours will be helpful to Indian students too & can be undertaken easily with the support of our alumni.

Here, Silicon Valley is merely a path to help people broaden their horizons, so that they know how others apply their technical knowledge to create beautifully useful products.

This would also be helpful to expose them to a not-so-common-here line of thought

wherein people look at their life, careers & technology in a different light. This would essentially bring out their innovative aspect & as a consequence MAY lead them to be technopreneurs.

CREATING STARTUP HUBS-

At our Universities (inc. IITs), there are rarely any opportunities to interact with people who have been involved in innovations, inventions, development of products that have impacted human lives, be it design of drugs or household items. Innovation and development process has its own charm, excitement, ups & downs, etc. which is essential to get it across to the student.

But, plain talks & lectures just would not suffice. Talks & lectures can be helpful in generating the spark needed, but sustaining it, seems only possible if students get to interact with some of these people on a regular basis.

So, to initiate the process we need to attract such people who'll act as "SEED" & will move with their innovations to grow their startups in & outside our technology institutes (despite lack of numerous infrastructural issues). We need these SEED people to infect the young minds towards technological innovation, to give them hands-on opportunities, to kick-start their thought process, to push them to dream & DREAM BIG, to incite them to change the world through breakthrough technologies.

People who work for startups generally start their own & those who get rich from startups fund new ones. But, it'll take years & we'll have to nurture the initial ones till a critical mass happen & the place organically grows into a start hub.

To bring the SEED here, government may need to create special zones around Universities where there would be every ease of starting a business based on technological innovation (though not TECHNOLOGY PARKS where there are only big companies).

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Today most educated Indian youth aspire to be IT entrepreneurs. We'll need active Government involvement to dictate policies in other upcoming technologies so as to drive people to take these seriously.

Is IT being a low capital intensive industry a reason people's thoughts naturally take recourse to it? Probably. So, for audacious ideas to germinate, we need to get the ease & money factor out of our youth's psyches.

Information dissemination is important & we need to show Examples to our educated youth, of young Indian technopreneurs who identified market opportunities & tapped them to advantage in diverse fields.

Innovation opportunities going forward will be at the cusps of different disciplines, but, in our country cross-domain research is virtually non-existent. For such research to happen, we'll need to fill the gap of missing interaction between various departments at an Institute level. Once that happens, probably then we can think of issues related to taking such innovations to the market.

The government, besides directly promoting research, can take indirect steps. This can happen if the risks & rewards are shared by various stakeholders, with each having stakes at different stages of a large-scale innovation project. Example - Policies which push the costly primary technological product providing industries (A) to take stake in the upcoming innovative startup which uses the products of A to build secondary innovative products.

So, in this way if we can make as many stakeholders as possible in developing the entrepreneurial ecosystem, it will be conducive for innovation. {And the government may step in & out, when required, to facilitate the process}

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Though there is no dearth of industry consultancy projects at institutions like the IITs, but, the long-term projects necessary to bring about product innovations are not too many.

A central body which guides & directs our technology institutes towards long-term, society-useful research & innovation may be helpful.

Technology Transfer, too, is missing in our institutes. Most faculty members, who are able to successfully commercialize their research, do so by going out of the way to help create a business around their research. The incentive schemes for promotion and evaluation does not take their contribution in a technology transfer project into account. This creates a strong disincentive for working on a prototype around a core innovation.

Hence, incentive schemes for faculty and research staff in our technology institutes need to be reworked in such a way that their efforts towards technology transfer can be rewarded at par with generation of core research as an output. This would present a choice in front of the researcher to take up prototyping and commercialization of technology rather than single-minded focus of producing quality research. Such goal congruence can be expected to lead significantly higher pace of technology transfer in the institutes.

We also have a bigger challenge of exciting more quality students to take up PhD after they graduate & then retaining them in the research institutions in our country. There is also generally a tendency of insecurity in the existing researchers in the country about their future employment.

Also, setting up of Technology Licensing Office (to protect), Technology Transfer Group (to market) & having Industry Day (to showcase) in our technology institutes might be useful in commercializing the existing innovations & stimulating the academic environment towards further innovation.

Therefore, COHERENT POLICY MEASURES at the National & University level are essential to kick-start the innovation & entrepreneurial process.

Everything will organically fall in place if we can instill, in our talented students, the following line of thought –

“Twenty years from now you’ll be more disappointed by the things you didn’t do than by the ones you did; so throw off the bowlines; sail away from the safe harbor; catch the trade winds in your sails; explore, dream, discover.” –Mark Twain

“Do you want to spend the rest of your life selling sugared water or do you want a chance to change the world?” –Steve Jobs

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