A concise report for the workshop on-

"**Unmet Social Needs as Drivers of Innovation**"

A unique 3-Phase Design Thinking Workshop sereis –
IDEA to PRODUCT

Chief Mentor:
Padma Shri Prof. Anil Gupta, IIM-Ahmedabad
Founder of Honey Bee Network

Organized by GTU

In collaboration with Honey Bee Network

Date: 22nd November, 2016
Venue: Gujarat Technological University, Chandkheda, Ahmedabad.

There is a strong desire among the policy makers that technology youth should be engaged with the society in a productive and purposeful way. One way to do so is to encourage and empower students and faculty members to take up a systematic investigation of various pain points such as under-utilisation or ill-utilization of available natural resources, energy, drudgery in tasks involving particularly women, inefficiencies in small industry or improving worker productivity, safety, quality control, etc. There could be many opportunities for improving sectoral efficiency through inter-disciplinary investigations. Every time a student solves a real life problem, he/she becomes not only a good engineer but also a good human being.

To find out the unmet social/industrial needs and solve those using technological advancements, GTU - Centre for Industrial Design (OPEN DESIGN SCHOOL) has planned the workshop series to convert Ideas to Product for the faculty members of GTU affiliating colleges. This workshop series is going to organize in three phases from November 2016 to March 2017.

- 1st phase of workshop series will be on "Unmet Social Needs as Drivers of Innovations" to scout the problems of industry or society to be organized on November 22, 2016.
- 2nd phase of workshop series planned in December 2016 would aim at elaborating on the problems scouted by faculty members based on first workshop, benchmark the available choices and identify the scope for improvement.
- 3rd phase of workshop series will be planned in February-March 2017 when faculty-student teams may present their solutions to the industrial and community representatives along with design experts to assess the utility of the solutions worked out. Some of these products may need finishing, user testing and fine tuning before they become market ready.

The secondary objective of the workshop series is also to help the faculty and senior students in documentation of the learning process. The subsequent batches can thus benefit from the case studies of transition of a problem identified by the students into a proof of concept and in due course into a prototype and eventually into a product. In addition, simple processes of prior art search has discussed to find out novelty of solutions, review of existing solutions and finding new approaches to solve the problem. Without at least some kind of originality, chances of an innovation germinating are not high. The workshop thus triggered an insatiable desire to excel, explore and experiment to imbue a spirit of adventure among tech youth.

The 1st phase of workshop was organized on "Unmet Social needs as Drivers of Innovation" on 22nd November, 2016 at GTU, Chandkheda campus. The learning summary is as below for the workshop:

Inauguration:

As per Indian tradition and culture, workshop was inaugurated with Lamp Lighting by chief mentor *Prof. Anil Gupta* – IIM-Ahmedabad; *Dr. Rajul Gajjar*, Hon'ble VC – GTU; *Dr. N M Bhatt, Dean* – GTU & Director – GIT; Dr. J.C Lilani Registrar -GTU and they have graced the dais for further inaugural function. Guest and dignitaries on dais were welcomed by flower bouquet and memento after the formal welcome by Dr. J C Lilani.

Inaugural Function and Felicitation of Experts & Guests

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| Contact: design@gtu.edu.in |
| Tel: +91-79-23267612; |

Prof. Anil Gupta advised faculty members that if all professors keep high expectations from students, then they will perform better. We must encourage the students to perform the best and to do the best. If any student creates prototype of a project, then do not satisfy. Instead of that think about how the student can convert the prototype into useful product. We as an academician need to change the perspective towards paradigm shift of education globally and broaden our vision for innovation and then only we can build the innovative ecosystem. GTU is trying to sensitize its students about social and community innovation to find out the issues and solve those using technological solutions through various initiatives like Design Engineering, 100 activity points, Sankul, GTU Innovation (GIC) Club, Start-up etc.
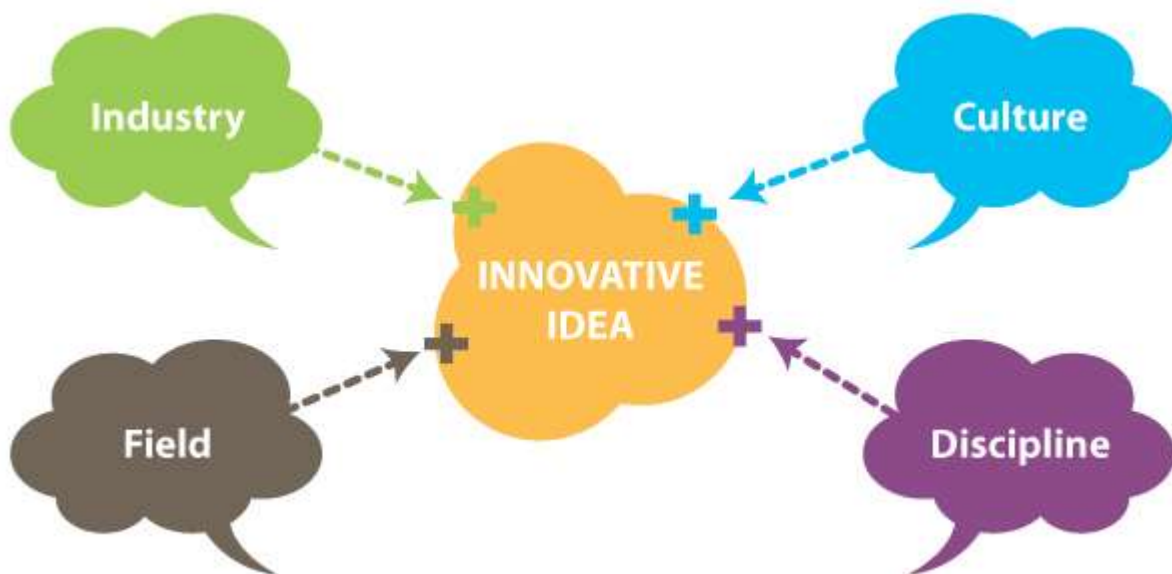
Groundbreaking and innovative ideas come from combining ideas from different industries, cultures, fields, and disciplines.
Source: https://www.smashingmagazine.com/2010/10/how-to-make-innovative-ideas-happen/

Dr. Rajul Gajjar, I/c Vice Chancellor of GTU motivated faculty members by saying that they are the real champions of the Design Engineering initiation. This workshop is planned to drive you for complete Design Process so that you would be able to guide students properly, she said. To find out the unmet social needs and solve those using technological advancements, GTU is organizing the workshop series. GTU has done taken several steps for rural outreach and to solve community issues under Vishwa-Karma Yojana, GTU Gram, Bridge course and NSS activities. She also mentioned about the recently published book titled 'GTU – Gramsetu (Bridge to the Village)'. There have to be ideas generation to solve social problems.

Dr. N.M. Bhatt, Dean of GTU said that we have made many changes in syllabus including addition of Shodhyatra, Inclusion of Open Ended Problem through Bridge course, 100 activity points and Design Engineering. GTU introduced courses of Design Engineering through Design Spine, during the academic year 2014-15, beginning from the 3rd semester. Design Engineering is a very unique and pioneering initiative of GTU and it is based on "Design Thinking" methodologies developed and used by engineers and designers all over the globe. One of the key objectives of this initiative is to infuse the methodology of Design Thinking into the mind-set of the students and the faculty members so that it is used in the study of all the core subjects of every branch. Other main objectives include; stimulating thought process and creativity among the students, learning problem-solving techniques, reducing the copy-pasting in the Project work etc.

Experts giving motivational speech on this promising juncture

Essential Learnings from Sessions delivered by Prof Anil Gupta –

Session 1- संवेदना और संरचना

Prof. Anil Gupta started this session with the motive of workshop "Ideas to product" with explaining the meaning of **"संवेदना"** with an example of product made by a student in the Health field which is used to measure the heartbeat and blood pressure and gives you ECG report on mobile which we can share with our doctors for further treatment.

Every college need to aim for at least 4-5 useful products each year from students projects to fulfill unmet needs of industry, society, community in all areas. Faculty member's role is to guide and motivate the students, as students have the capability to convert ideas into products.

Prof Anil Gupta narrated couple of stories for motivating participants related to various innovations as below:

1. As shown in pictures below, the Mochi's (Cobbler) of 4 different countries working with their tools in different environment. They are using various tools and skills for working. Mangolia has more advance tools than other countries even though it is small country, so thinking ability of the people drive the growth of the country.

Cobbler of India

Cobbler of Kabul

Cobbler of Mangolia

Cobbler of China

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2. The painting of 25000 years ago, showing the simple design elements like triangle, circle, square etc are used to illustrate human beings and animals. As of today, we are using such elements to draw the human being and animals. There were no languages available at that time but concept of beauty were shown by pictures and arts using design elements.

3. A Guru - Shishya story of 2000 year ago, Guru predicted about shortage of water in future. Once Guru asked a glass of water to drink and Shishya brought it, after drinking water, Shishya returned to kitchen with empty glass. When he came back Guru asked about what he did while returning to kitchen. Shishya replied that he took glass from Guru, went back to kitchen and place the glass back on shelf. Guru asked the same questions again and again and Shishya has replied the same again and again. After several replies, Shishya noticed his mistake that while returning to kitchen, he poured some drops of water on the floor and realized that Guru was trying to teach him the lesson of saving the water.

> 'Just'
> A
> Drop
> Of
> Water

4. In 1868, new regime of Japan started to strategize for "Education Plan for 200 years" and their hard work resulted in 100% literacy in the country today. GTU need to work hard to convert every single prominent idea into useful product so that we may build the image of Gujarat as next Silicon Valley for the world of Entrepreneurs.

5. 100 years ago, the king of Gondal, Shri Bhagvatsinhji build the resting place named "Thaklo - Vishamo" at every one kilometer distance for the women who carry the bunch of hay over the head, so that they can put their bunch of hay on that Thaklo, rest for some time and again walk ahead, avoiding the bend over to put the bunch of hay on the ground.

Student's projects should involve high interest, challenges, needs of society and final outcome as desired.

Session gets more and more interactive by discussing the design problem of hand pump like wastage of water, more than one person are unable to drink water simultaneously, unable to control the flow etc. A person from Rajasthan has modified the design of hand pump, as shown in picture 2, by adding a smaller tap with existing bigger tap. Most inspirational thought given by Prof Anil Gupta was to have Human centered approach for the design for the sustainable development.

Picture 1	Picture 2	Picture 3

Session 2: सरलता और सहजता

After networking tea break, second session was started with the discussion on how to define and scout for the right problems. Prof. Gupta explained the strategy of problem definition by giving the example of Mahatma Gandhi's Announcement of a Design Competition for designing a Charkha on, 24th July 1929 (http://gyti.techpedia.in/announcement); One Lakh Rupees or 7700 Pounds prize was declared. The design statement for this challenge can be the best case study for faculty members and students to define their project work properly with details. All boundary conditions should be defined for the project. Main focus was to have paradoxical way of thinking and to benchmark the problems. Products should have the iterations for each phase of design process to fulfill the exact requirements of the user.

He also mentioned the work done with the municipal school or slum students for more contribution in the development of society as most of the problems and ideas are very obvious that we cannot see from outside. In this session, various projects were discussed from different colleges and results with the conclusion that students prototype should be converted into products and made them available to the market.

Before the lunch, Prof Gupta concluded that students have all capabilities to convert ideas into products if they are given proper guidance and mentorship support. Faculty

members and colleges should have high expectations from students so they can achieve better results in their projects. More focus should be on team building, multidisciplinary projects and benchmarking of the problem.

Session 3: समाधान और संतुष्टि

After lunch, during third session, Prof. Gupta discussed various aspects of the projects carried out in the GTU in past years with faculty members. Then below proposal was discussed and need to be implemented by every college of GTU to convert promising idea of the student into useful projects through Design Engineering or Final Year projects.

Proposed plan and timeline to be follow by colleges of GTU till next workshop, phase 2:

1. Identify the past or on-going students projects from your college that can be converted into product after some modification or Identify the unmet needs of the user from rural or urban communities, industries, small scale entrepreneurs, public institutions in education, health, environment, energy, sanitation or any other sector related to sustainable development.
2. Define User Persona (end user profile and user context) to get more insights like job profile, skills required, tools and knowledge used to perform job, roles and responsibilities, challenges and ways to overcome the same, market and segment for products/solutions, personal information as age, family background, education and hobbies etc.
3. Define these identified needs in form of Design Problem Statement as mentioned in Gandhiji's challenge above. A complex problem may be modularized into sub-components for resolution by various teams after doing prior art search, benchmarking, and exploring multiple pathways for exploring the solutions.
4. Multidisciplinary projects/team shall be appreciated.
5. Prepare Case study - In detail (one with success and one with failure story). Is solution used by industry?
6. Design audit for the projects that reach to the prototype stage in presence of local designer, industry expert and subject matter expert to have incremental changes. Invite other nearby colleges too for this kind of events.
7. 3 best projects with complete documentation will get Prof. Gupta's recent book on "Grassroots Innovation: Mind on the margin are not marginal minds" as prize.
8. Prepare/identify at least three Panchtantra type stories to motivate students for Empathization. For example, kindly refer the story of Gondal King's innovation share here in the report on page 7.

Goals and tasks for the next workshop: Phase 2 of this Design Thinking workshop series is planned on 20th December, 2016 (subject to confirmation of Prof Gupta on his availability) and would aim at elaborating on the problems scouted by faculty members based on first workshop, benchmark the available choices and identify the scope for improvement. This second phase would be focused on ideation and product development phase of Design Thinking. So before this workshop, all participants of first workshop need to identify the idea and bring the summary of their idea to phase 2.

Report Prepared by:
Design Team, Centre for Industrial Design, GTU.

| Gujarat Technological University (http://www.gtu.ac.in/) |
| Contact: design@gtu.edu.in |
| Tel: +91-79-23267612; |