



Student Start-up Support System  
(S4)



Gujarat Technological University  
(GTU), Ahmedabad



GTU Innovation Council (GIC)

## **Design Engineering – 1**

### **Report on**

### **15<sup>th</sup>-18<sup>th</sup> Faculty Development Program (FDP) (Combined for 3<sup>rd</sup> & 4<sup>th</sup> Semester)**

Date: 13<sup>th</sup> – 16<sup>th</sup> March, 2015 (15<sup>th</sup> FDP)  
18<sup>th</sup> – 21<sup>st</sup> March, 2015 (16<sup>th</sup> FDP)  
23<sup>rd</sup> – 26<sup>th</sup> March, 2015 (17<sup>th</sup> FDP)  
30<sup>th</sup> March – 2<sup>nd</sup> April, 2015 (18<sup>th</sup> FDP)

Venue: 126, ACPC Building,  
GTU Innovation Council (S4-CiC3),  
L.D. Engineering College, Ahmedabad

**References:** Guidelines for the 4<sup>th</sup> semester students for Design Engineering – 1B subject (available at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_Guideline.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_Guideline.pdf) ), Manual for the 3<sup>rd</sup> Sem and AEIOU Framework respectively at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_Designmaual\\_2.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_Designmaual_2.pdf) and at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_AEIOU.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_AEIOU.pdf)).

**GTU's Centre for Industrial Design (OPEN DESIGN SCHOOL)** is engaged in introducing design driven innovation at GTU. With this objective in mind, GTU has introduced an innovative - strong 6-semester spine of Design Engineering in the BE syllabi. It is a first of its kind initiation in Indian Education System. Since April 2013, GTU's Centre for Industrial Design (OPEN DESIGN SCHOOL) has conducted a series of seminars/workshops/ FDPs to sensitize the design driven innovation intervention. It has also created a framework for the final year projects. For Design Engineering at semester 3, 9 Faculty Development programs (FDP) were organized in the months of August to November, 2014. In all, 650 faculty members have participated in the FDPs for Design Thinking methodology from approx. 115 Engineering colleges and from 20 different engineering disciplines from throughout Gujarat state.

After the success of the 6 FDPs for Design Engineering – 1B during the current semester, GTU - Design Team has planned a series of four days FDPs, for faculties who yet to attend any of the previous FDPs, from 13<sup>th</sup> March, 2015 to 2<sup>nd</sup> April, 2015 through 15<sup>th</sup>–18<sup>th</sup> combined Faculty Development Programs (FDP) for 3<sup>rd</sup> and 4<sup>th</sup> semester. The aim of the FDPs was to give guidelines to faculties for B.E. II students for Design Engineering subject with various brainstorming and discussion sessions.

**Schedule/ Activity Information of the Program:**

Day 1			
Session No.	Time	About	Description
10.00 am – 10.30 am		Registration and Breakfast	
1	10.30 am – 11.00 am	<b>Welcome &amp; Orientation session</b>	Introduction of 3 <sup>rd</sup> & 4 <sup>th</sup> semester syllabus to participants
2	11.00 am – 12.00 pm	<b>Design Thinking Methodology</b>	Design Thinking approach for GTU students. Why it is required? How it will enhance creativity and innovation?
3	12.00 pm – 1.30 pm	<b>Observation Technique (AEIOU) &amp; Canvas : Empathy Mapping</b>	Why Observation is required (Difference between Design & Design Thinking) Various tools and techniques for observation- Stanford Methods
1.30 pm – 2.00 pm		Lunch Break	
4	2.00 pm – 3.30 pm	<b>Field Activity</b>	Team will visit their selected domain for Observation

5	3.30 pm – 5.00 pm	<b>Summarization &amp; Preparation of Empathy Mapping Canvas</b>	Every team need to summarize their observation to get empathy of user and need to make Empathy Mapping Canvas
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Day 2			
Session No.	Time	About	Description
10.00 am – 10.30 am		Breakfast	
6	10.30 am – 11.00 am	<b>Discussion on Day 1 activity</b>	Common Discussion for Empathy canvas
7	11.00 am – 1.30 pm	<b>Canvas : Ideation</b>	Explanation of Ideation activity and how it will magically affect whole Design experience
1.30 pm – 2.00 pm		Lunch Break	
8	2.00 pm – 5.00 pm	<b>Preparation of Ideation Canvas</b>	Team wise Canvas filling activity

Day 3			
Session No.	Time	About	Description
10.00 am – 10.30 am		Breakfast	
9	10.30 am – 12.00 am	<b>Canvas : Product Development</b>	Towards <i>Evaluation of Idea</i> activity
10	12.30 am – 1.30 pm	<b>Preparation of PD canvas</b>	Team wise canvas filling activity
1.30 pm – 2.00 pm		Lunch Break	

11	2.00 pm – 3.00 pm	<b>Field Work</b>	For Customer revalidation of PD concept
12	3.00 pm – 5.00 pm	<b>Summarization for Pre-Design part</b>	Evaluation of Idea after customer revalidation

<b>Day 4</b>			
10.00 am – 10.30 am		Breakfast	
13	10.30 am – 11.00 am	<b>Prior art search</b>	Teams will be introduced different methods, tools, website to find out research literature through IPR/Patent database
14	11.00 am – 12.00 pm	<b>Design Thinking –An Industrial Impact</b>	How Design Thinking affects in Industrial Product Design/Development Process
15	12.00 pm – 1.30 pm	<b>Pre-design</b>	Find out Learning Needs and prepare LNM
1.30 pm – 2.00 pm		Lunch Break	
16	2.00 pm – 5.00 pm	<b>Dirty Mock ups (Fast Prototype)</b>	One shall prepare schematic plan/ prototype (conceptual/ rough/ broadly anticipated only). It shall elaborate on details on anticipated working patterns/ mechanisms. (This is to address the <b>PROOF OF CONCEPT</b> criteria)

**List of Program Mentors:**

<b>Sr. No.</b>	<b>Name of the Mentor</b>	<b>Institute/ Organization</b>
1.	Mr. Yash Saxena	Founder, Openfuel
2.	Ms. Devina Kothari	Industrial Design Innovation Specialist, Mizu Ha, School of Architecture, Rajkot
3.	Prof. Rajvi Parikh	Assistant Professor, GCET, VV Nagar
4.	Prof. Jaimini Prajapati	Assistant Professor, GIT, Ahmedabad

5.	Prof. Amit Patel	Assistant Professor, GIT, Ahmedabad
6.	Prof. Karmjitsinh Bihola	Assistant Professor, Design Engineering Team, GTU
7.	Prof. G.N. Khanduja	Assistant Professor, Design Engineering Team, GTU
8.	Prof. Jaimin Dave	Assistant Professor, Design Engineering Team, GTU

### Day 1: 10.30 AM onwards

The day started with eagerness among the participants regarding 4<sup>th</sup> semester syllabus and guidelines for Design Engineering – 1B subject. Participants were divided into branch specific teams. *Prof. Karmjitsinh Bihola – GTU Design Team* has discussed the syllabus and guidelines for 4<sup>th</sup> semester in first session. *Prof. Bihola* shared the views on the Design Thinking, its importance and applicability in various domains through examples. *Prof. Jaimin Dave-A.P., GTU*, talked over different case studies based on the approach of Design Thinking touching the various aspects of the product success and failure. The participants were given exercise to analyse more case studies from given Workshop tool kit on their own and also presented their thoughts about Design Thinking process implemented in those case studies. *Prof. Bihola* also gives the overview of the AEIOU Observation Techniques (Frame work), Design Thinking with the help of Observation Record Sheets which were prepared to help students while they are on field to record their observation, reference to the same team wise filling activity done latter on.

*Mr. Yash Saxena-Founder, Openfuel* has discussed the importance of observation for Design Thinking giving various product examples. *Mr. Saxena* also shared views on the importance of Observation Techniques for Empathy Mapping via discussing the various heads of Empathy Mapping with more focused on story building part.

### Day 2: 10.30 AM onwards

Second day started with discussion on the idea of teams that they have prepared through Empathy Mapping on Day-1. The 2<sup>nd</sup> day of the FDP was dedicatedly spared for Ideate the problem. *Mr. Yash Saxena* after doing interaction with teams started explaining the next canvas of the Program-Ideation Canvas. *Mr. Saxena* gives information that how to move forward taking reference of Empathy Canvas and filling up of the Ideation Canvas. The Canvas results in various problem statements after the whole day rigorous exercise. Team can have many problem statements after completion of the canvas connecting the various sections of the Canvas like People, Activities, Situation/ Context/ Location and Props.

### **Day 3: 10.30 AM onwards**

Team tried to come up with the best problem definition of their idea after completion of Ideation Canvas at Day 2. On day 3 *Mr. Yash Saxena* explained Product Solution Canvas all the team, eager to focus on one problem and then to find the solution of it. *Mr. Saxena* advices team to focus on Customer Revalidation part, key section of the canvas. The novel solution will come from the same section and doing the iteration many times as possible. During the canvas filling activity all team members have done high level of brainstorm to focus on one problem and for its one better solution.

*Ms. Devina Kothari, an Industrial Design Innovation Specialist*, from Rajkot also gave presentation with her own projects in which she applied this amazing technique of Design Thinking. *Ms. Kothari* explained how design thinking impacted at her projects and how she derived creative and innovative solutions out of it. Also she cleared participants' mind with messy thoughts related to Impact of Design Thinking in Industrial products.

### **Day 4: 10.30 AM onwards**

On the final day, tasks ahead of the teams were to finalize their idea with preliminary design and fast prototyping. Based on their observation on field and interview with users they were guided for their pre-design phase.

*Prof. G.N. Khanduja* explained Learning Needs Matrix part of 4th semester Design Engineering – 1B curriculum. This matrix helps students to identify their branch specific skillsets like theories/ principles/ methods/ tools/ experiments/ use of software/ applicable standards/ design specifications which are not in syllabus of Engineering. These skillsets are useful to students to complete their projects/products with specific competency level. *Prof. Khanduja* aware all the participants with very good presentation of basics of IPR, how to protect one's idea through patent, how one can check the novelty of the idea/ problem statement, what sets of activities GTU is doing in field of IPR etc.

In the end, *Mr. Hiranmay Mahanta – Honorary Director, GTU Innovation Council* motivated all faculty members for implementing pedagogical intervention for improvement of Design Engineering subject by giving numerous examples in which we can find enormous impact of Design Thinking.

During the various FDPs *Dr. Akshai Aggrawal (Honourable VC – GTU)* guided all participants with his visionary thoughts about the subject and future curriculum. *Dr. Aggrawal* also gave various examples related to Design Thinking to make audience aware about the real vision required from the Faculty Members while building the future Engineers. He discussed the Guidelines for the 4<sup>th</sup> semester students for Design Engineering



## Post-graduate Research Centre for Industrial Design

### OPEN DESIGN SCHOOL

– 1B subject (available at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_Guideline.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_Guideline.pdf) ), Manual for the 3<sup>rd</sup> Sem and AEIOU Framework respectively at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_Designmaual\\_2.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_Designmaual_2.pdf) and at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_AEIOU.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_AEIOU.pdf)). He emphasized the policy points for making the subject more sustainable in all affiliated colleges.

### Photographs

15<sup>th</sup> FDP: 13<sup>th</sup> – 16<sup>th</sup> March, 2015



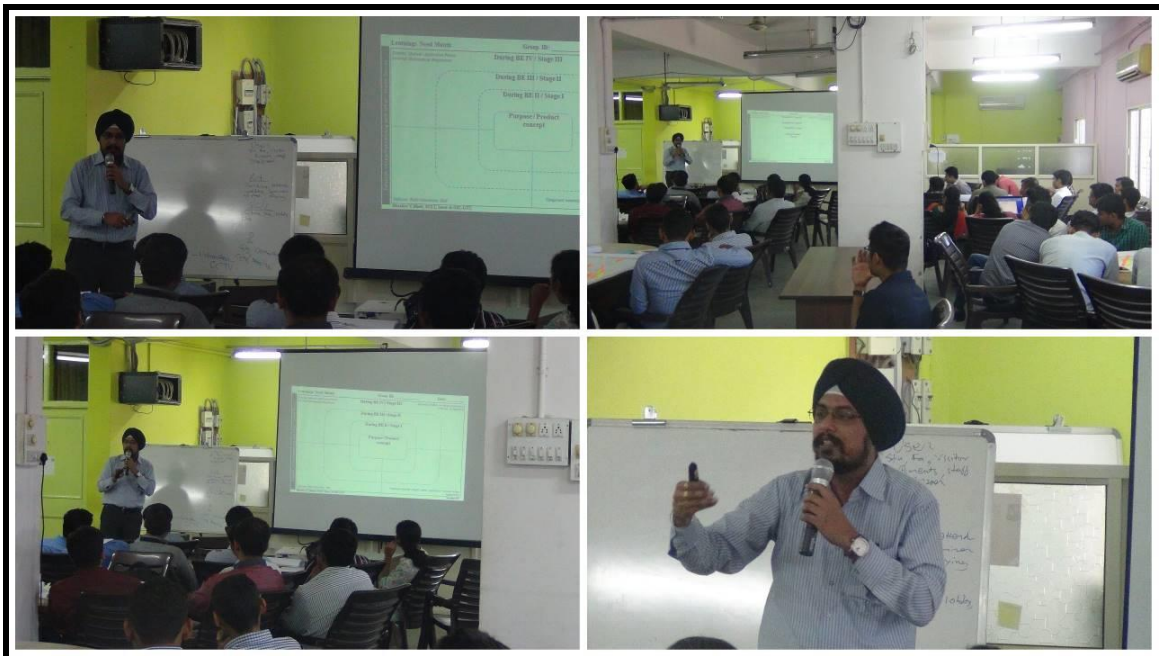
Prof. K.A. Bihola sharing importance of Design Thinking



Mr. Yash Saxena, founder openfuel sharing views on canvas



Participants presenting views after Canvas filling activity



Prof. G.N. Khanduja during session of Learning Need Matrix



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Rough Prototype prepared by Faculty members during FDP



Hon.ble VC-GTU, Dr. Akshai Aggarwal Sir, Mr. Hiranmay Mahanta, Honorary Director, GIC-GTU and Mr. Rajnikant Patel, Advisor, (RCSC) GTU interacting with Participants

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Mr. Rajnikant Patel appreciating Faculty Participants at concluding session of FDP



16<sup>th</sup> FDP: 18<sup>th</sup> – 21<sup>st</sup> March, 2015



Interaction of Mentors and Participants after canvas filling activity



Ms. Devina Kothari conducting Case Study session



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Hon.ble VC-GTU, Dr. Akshai Aggarwal Sir sharing importance of subject with Participants during FDP



Rough Prototype prepared by Faculty Participants



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Mr. Ashok Gupta, CEO (Residence), GTU appreciating Faculty Participants at concluding session of FDP

**17<sup>th</sup> FDP: 23<sup>rd</sup> – 26<sup>th</sup> March, 2015**

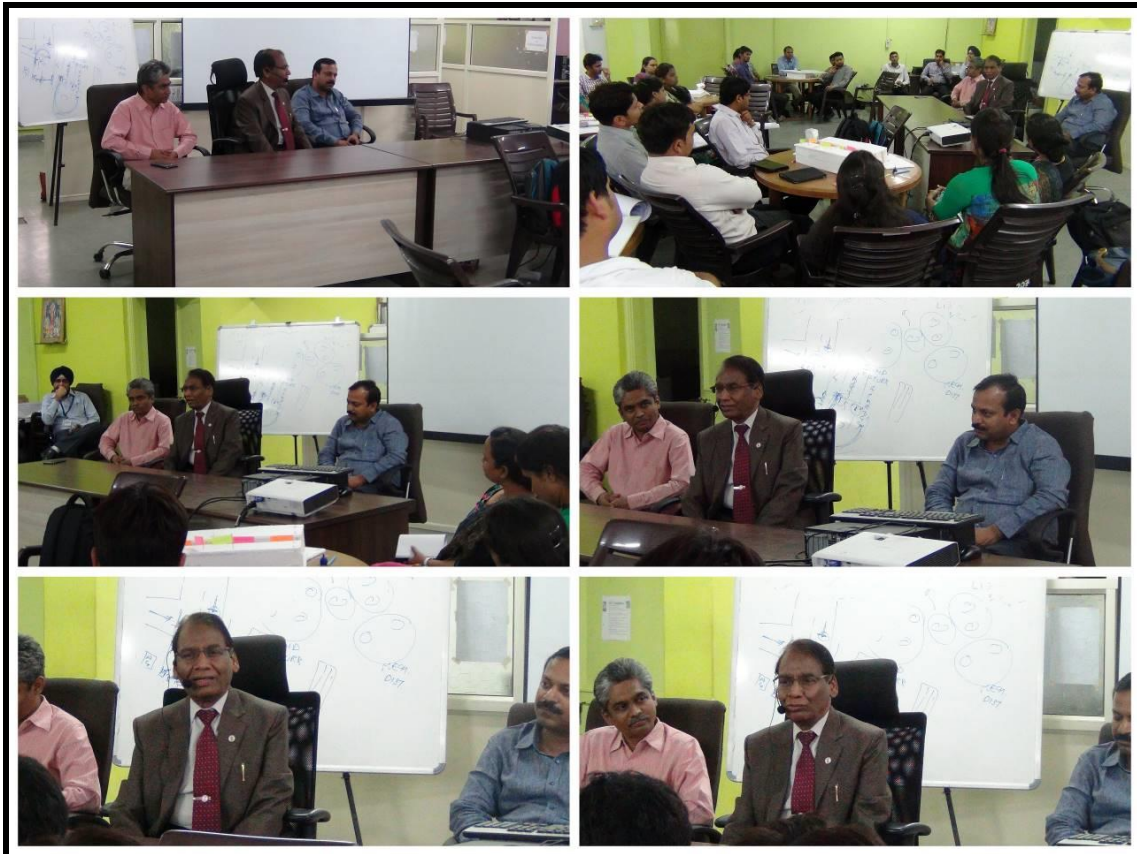


Participants preparing Fast Prototype during Program



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Hon.ble VC of GTU, Dr. Akshai Aggarwal Sir sharing interesting facts about subject with other dignitaries on dais



Mr. Ashok Gupta, CEO (Residence), GTU appreciating Faculty Participants at concluding session of FDP



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18<sup>th</sup> FDP: 30<sup>th</sup> – 2<sup>nd</sup> March-April, 2015



Mr. Yash Saxena, founder openfuel and Prof. Jaimin Dave sharing views during the sessions



Faculty Participants during Canvas Filling activity



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Mr. Hiranmay Mahanta, and Mr. Ashok Gupta interacting with Participants



Faculty Participants preparing Rough Prototype



*Post-graduate Research Centre for Industrial Design*

**OPEN DESIGN SCHOOL**



Hon.ble VC of GTU, Dr. Akshai Aggarwal Sir and other dignitaries interacting with participants



Faculty Participants receiving Certificate of appreciation during concluding session

**Feedbacks from participants:**

To get the participants' feedback, FDP experiences were segregated on below mentioned points. In nutshell, all faculty members have given very significant and effective feedbacks.

**Reason to attend the FDP:**

- ✓ I had attend this FDP to learn about Design Engineering Course. Specifically what is purpose of this course? how to evaluate students? What are the best practices we may follow with students to best utilization of this course? etc....

Hardik B. Nariya  
Shree Swami Atmanand Saraswati Institute of Technology

- ✓ The purpose to attend Design Engineering subject is to understand the need and importance of the subject that is not bounded with any specific framework.

Hardik N. Chauhan  
Atmiya Institute of Technology & Science, Rajkot

- ✓ To learn the methods associated with design based thinking and become capable to transfer this knowledge to the students so that they can implement design based engineering for their projects and thus become more employable.

Dhavalkumar B Modi  
B. H. Gardi College of Engineering & Technology

- ✓ I have attended this workshop because I wanted to clear my past doubts as well as I want to teach the further concept with clarity. My main purpose is to explore myself so that I can also develop new product. Hope I can do.

Krupali A Majithiya  
HJD ITER

**Concerns about Design Engineering 1(B):**

- ✓ My expectation was to understand how to develop the different canvases with the use of case studies which was very well fulfilled with this FDP. Things have become clearer as compared to the early knowledge.

Sonali Ankit Virparia  
Gandhinagar Institute of Technology

- ✓ Since its new approach towards something new, so it was very good session i m satisfied, i m expecting this will bring change in way of deciding final year projects, more enthusiasm among students for learning engineering in creating something new wide more ideas of narrow downing the DE process.

Abhishek Singh Thakur  
Parul Institute of Engineering

- ✓ I went to the Workshop with the mind-set that, there will be a stereotyped sessions and we just need to pass 4 days. But The workshop was carried out in very nice way by the coordinators (specially KarmjitSir has motivated a lot) that help us to keep our self-energetic.



Shweta Y. Yagnik  
L.J. Institute of Engineering and Technology

- ✓ My expectations were as such to know the root of Design Engineering. The entire workshop was much more above than what I have thought about. It not only helped to understand the concept of Design Engineering, but rather it helped me to approach any problem in an entirely different style. Design Engineering, I thought was just limited to Engineering, but after this workshop; it's very clear that this "Design Thinking" can be applied to any aspect of life.

Sonali Ankit Virparia  
Gandhinagar Institute of Technology

- ✓ I quite satisfied with this workshop, little unhappy from the time management. I think observation time should be long and prototype making time should be long. We can combine product development canvas and matrix canvas on the same day. DE is really very good concept I really appreciate you for bringing this to us and students.

Krupali A Majithiya  
HJD ITER

- ✓ As in third semester it was abrupt and not well planned, lack of co-ordination between GTU, Faculties and students was there. We thought that it would be interesting and enriched with the content. This was the expectations. Now attending we are quite satisfied with the subject and want to make it more interesting or there is need to make this subject more interesting.

Tripathi Bishnukumar Bechanlal  
Silver Oak College of Engineering and Technology

- ✓ I am very much satisfied with the previous FDP session. Now I'm clear about the subject & also about the great & noble intention of GTU. Hat's off to the people who have this type of vision & also felling proud to be a part of this university who really cares for their students to create a technically powerful nation.

Kunal Thaker  
Sal Institute of Technology & Engineering Research

**Influence of FDP on your Learning Pedagogy:**

- ✓ This was a completely new experience and the way, in which the mentors explained to us the entire process; it was very informative and very interactive. It made us understand whole procedure for sem 3 & sem 4 that how to guide the student, what to do in the sem 3rd & 4th Design engineering is completely opposite of what we had thought. Innovation through Ideation Canvas Is very helpful for Industry as well as development of student and turn the thinking towards the real life problem and solve it effectively

Hardik N. Chauhan  
Atmiya Institute of Technology & Science, Rajkot

- ✓ I learn "Randomness" attitude and felt how it actually helps in finding Problems/Solution out of the box. Experience was paradigm shifting and will help me to make understand the students how to carry out the work for the subject.

Shweta Y. Yagnik  
L.J. Institute of Engineering and Technology

- ✓ I am glad to say that this subject broadens my thinking system and to connect with the problem that we not observing in our day to day life. Now onward I would always in search of such observation that helps directly or indirectly to our empathy user. I also say that I am luckier to carry this subject in my college.

Gehlot Dharmeshkumar  
Alpha College of Engineering

- ✓ My thinking is really improved by this workshop and after this I am also thinking to do something that will be helpful to society if I can. Really very thankful, because now I am also able to think something new.

Krupali A Majithiya  
HJD ITER

- ✓ Actually Design Engineering influence me lot as this subject will defiantly help anybody to think. Now a day, the actual scenario is that the thinking process has been stopped & forced to be a clerk who can't think out of the box. It is not our system. Today's education system is the biggest example that yet BRITISHERS rules over INDIA; not physically but mentally. Design Engineering is the process to free our mind to think something for our nation & mankind.

Kunal Thaker  
Sal Institute of Technology & Engineering Research

**Key learning points from FDP:**

- ✓ After attending the workshop I keep on thinking what is lacking in current solutions, what are the untapped areas that can be worked upon? This will help me to give directions to students about how to find problems based on "Empathy". If the problems that have highest empathy get some solution then it will definitely highest impact on society.

Shweta Y. Yagnik  
L.J. Institute of Engineering and Technology

- ✓ Think of easy and feasible solutions. Think of every aspect of solutions. Create empathy with user having problem first and then try to solve that problem.

Lokin P. Joshi  
Sankalchand Patel College of Engineering, Visnagar

- ✓ Understanding of canvases. Understanding of innovation. Need of Design thinking. How to observe and where to observe and why to observe. Empathy Mapping. Ideation. Product development. Learning need matrix

Arpit D. Patel  
SAL Engineering and Technical Institute

**Thought on improvement in Class via FDP:**

- ✓ I can guide now student how to find the problem using "Design Thinking" process, what is the importance of empathy mapping. Before attending workshop, sheets are only piece of paper with empty spaces that has to be filled up somehow....but now I actually understand the importance of each and every section. So with my improvement i will definitely make my lectures in such a way that my students will also get motivated to do something out of the box.

Shweta Y. Yagnik

L.J. Institute of Engineering and Technology

- ✓ In class lectures/ field work on design, I would be incorporating the methodologies I learnt during the FDP programme. I am thinking that the students should go to villages, and work on the real time problems which are faced by our citizens. This could help the students to learn some real time problems and also help to develop our villages, state through the implementation of engineering. Now, I would recommend the students to do more and more interaction and detailed analysis of the problems which is faced. They can make something out of their minds, and write down the numerous ideas which they are getting to implement the solution of the problems. Then, our team would be checking the feasibility of the solutions which can be implemented. So, in this way we might get something which can be really helpful to our society as well as students.

Rahul Thaker

Gujarat Institute of Technical Studies (GITS)

- ✓ I will arrange all branch DE teachers session for knowledge sharing. I will explain observation technique for sem 6 students to be helpful for shodhyatra. I will explain in brief to all the students of sem 4 to better design. I will explain to project students about canvas preparation with logic behind it.

Rena N Shukla

GEC, Surat

- ✓ Taking lecture with video concerned with the topic. Creating empathy towards subject by creating stories. Taking students on the world tour by patent search on particular topic. By becoming free from regular "TEACHER MINDSET". Explaining topic via making some small proto type.

Kunal Thaker

Sal Institute of Technology & Engineering Research

**Thought on improvement of FDP sessions:**

- ✓ Always include examples while explaining the new canvas. And this was rightly done in this FDP. As a result there was no confusion left behind.

Sonali Ankit Virparia

Gandhinagar Institute of Technology

- ✓ There should be clear vision what we have to give students to design. As initially it was told to also submit research paper report also by students, but now there is no talk about this in workshop. So there must be a clean guideline for students what to do and what not to.....

Vivek M. Unadkat  
Atmiya Institute of Technology and Sciece, Rajkot

- ✓ Session should start before the semester beginning. Say in May-June for Next semester course, so that Faculties can also get some time to prepare their case studies thoroughly and thus better guide the students. Real Life Case Studies (As presented by Ms. Devina about the Cornea KIT she developed) need to be given more time. Instead of Theory/Group Session, Session from actual experts should be done in the beginning as these only opens up the mind to new ventures.

Bhavesh Jaiswal  
Shakersinh Vaghela Bapu Institute of Technology Gandhinagar

**Your experience before and after attending FDP in relation with Design Engineering:**

- ✓ Design engineering is very good process or steps that can lead to best and optimal solution of any problem. But the main situation is that if we starting with particular domain and after 4th sem students will have particular definition but when they are started implementation the scenario almost changed and students want switch over to other definition.

Hardik B. Nariya  
Shree Swami Atmanand Saraswati Institute of Technology

- ✓ I have experience that Design engineering subject without any strict boundary is needed to produce real engineer. I learned how randomness helps in finding problem/solution.

Shweta Y. Yagnik  
L.J. Institute of Engineering and Technology

- ✓ Before the FDP training, my awareness towards Design Engineering is not much but after the FDP training, I really feel it's important to create new ideas and implement this to engineering as per requirement.

Ashish H. Makwana  
Marwadi Education Foundation Group of Institutions, Faculty of Technology

- ✓ Before i did not know much about design engg. after attending the FDP session got to know how simple it is, but the fact is that we don't utilize over own ideas in it. Know the thinking has changed and lastly it will help the students in their projects.

Gurpritsingh T. Viridi  
Alpha College Of Engineering and Technology

- ✓ Before attending FDP session, I thought that GTU has no work to do & this all the things (canvas) are like "SHEKHCHALLI NA TUKKA". I thought that GTU is enjoying lot by giving us this type of sense less work because it is easy to say something from AC cabin but ground reality is totally different. I thought that this system was the suggestion from an executive person of GTU who went for a foreign trip with his/her family in the name of Education tour & he/she did nothing except enjoying there with family. Now the scenario is that he/she had to present the observation done there but he/she had nothing to present so he/she searched something on the internet & gave this system to GTU. I am very sorry.....

Kunal Thaker

**What sessions have you found that need to give more/less time?**

- ✓ The session for redesign must be given some more time so that we can talk about our proposed solution with the actual users.

Rahul Thaker  
Gujarat Institute of Technical Studies (GITS)

- ✓ Site observation/visit should have more duration

Arpit D. Patel  
SAL Engineering and Technical Institute

- ✓ Actually Design engineering session divided in to four equal parts as we have to make four different canvases. so my point of view it was very well divided and we got enough time to think.

Gehlot Dharmeshkumar  
Alpha College of Engineering

- ✓ Observation and prototype making time should be more. 1<sup>st</sup> day observation + AEIOU sheet. 2<sup>nd</sup> day Empathy + Ideation. 3<sup>rd</sup> day product development + Matrix. 4<sup>th</sup> day Prototype making and discussion.

Hardik M. Agravatt  
SVIT, Vasad

- ✓ Patent related. Prior art search related.

Rozina R. Surani  
Vishwkarma Government Engineering College, Chandkheda

**References:** Guidelines for the 4<sup>th</sup> semester students for Design Engineering – 1B subject (available at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_Guideline.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_Guideline.pdf) ), Manual for the 3<sup>rd</sup> Sem and AEIOU Framework respectively at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_Designmaual\\_2.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_Designmaual_2.pdf) and at [http://www.gtu.ac.in/circulars/15Apr/04042015\\_AEIOU.pdf](http://www.gtu.ac.in/circulars/15Apr/04042015_AEIOU.pdf)).

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