Design Thinking and Innovation in Teaching and Training

(8th,9th,16th,29th November, 2021)

Conducted by – Dr. Kaustubh Dhargalkar,
(Founder- Potentials and Possibilities)
In collaboration with
Commonwealth Education Media Centre for Asia
(CEMCA)

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A brief overview of the content covered during the four-day workshop, “Design thinking and Innovation in Teaching and Training”

Date and time	Topics	Master Trainer
Day 1 **(8th Nov, 2021)** **(10:30 am to 12:30 pm)**	• Design thinking in action • A few student initiatives/ventures • The theoretical construct of Design Thinking • Ecosystem Mapping Assignment 1 – Mapping the ecosystem for a specific subject taught	Dr. Kaustubh Dhargalkar
Day 2 **(9th Nov, 2021)** **(10:30 am to 12:30 pm)**	• Empathy & Last-Mile-User-Connect • Techniques for establishing the same Assignment 2 – Interaction with relevant stakeholders	Dr. Kaustubh Dhargalkar
Day 3 **(16th Nov, 2021)** **(10:30 am to 12:30 pm)**	• From Observations to Insights • Framing the problem(s) around curriculum creation/revamping • Understanding the process/methodology of Design Thinking	Dr. Kaustubh Dhargalkar
Day 4 **(29th Nov, 2021)** **(10:30 am to 12:30 pm)**	• Fostering Design Thinking in an academic setting • A few outcomes achieved • Solutioning for Curriculum creation/revamping • Idea generation	Dr. Kaustubh Dhargalkar

Acknowledgments:

We would like to convey our sincere gratitude to

1. Prof. Dr. Madhu Parhar, Director - CEMCA and Mr. Saurabh Mishra, Program Officer (Skills) – CEMCA, for their unstinted support in planning and executing the workshop.
2. All the participants (academicians and corporate trainers from five different countries) for their enthusiastic participation and making the workshop enriching for each other.

Introduction

Back in 1929, Nobel laureate, Rabindranath Tagore, described education as an institution that "had its luggage van waiting for branded bales of marketable result." Have things changed since then? Not much. Do we need to rethink about the manner in which teaching happens? Yes, a resounding yes.

Educators must approach learning as an activity that happens every day, around the clock; their goal must be, not to disseminate knowledge, but to inspire their students with a thirst for knowledge. Each session should end with students racing out of the classroom to learn more about the day's topic through their own experiments.

Tagore, beautifully captured the essence of the Gurukul system that existed in ancient India, where a student spent a good part of her/his teenage years at the Guru's ashram learning about life through experiences, experiments and debates. His labour of love, 'Shanti Niketan University' enshrined all those principles.

Tagore, an outspoken critic of the rote lecture style of education, emphasized that teachers should see the world as a global village populated by curious children eager to fill their empty minds not just with data, but also with wisdom and experiences and a feeling that curiosity pays rich dividends. He recommended two simple yet effective teaching methods: *teaching through experimentation*, which takes students out of the classroom so they can get first-hand experiences; and *active learning,* in which educators perform fewer monologues and students engage in more discussions and debates.

Design Thinking, with its emphasis on empathy & experimentation shows the way to embed what Rabindranth Tagore espoused, almost a century back.

In today's rapidly evolving scenario, the purpose of education should not be just 'Dissemination of Knowledge', it should be 'To create Lifelong Learners' who have the ability and conviction to adapt to unfolding scenarios.

Aim

This workshop on 'Design Thinking and Innovation in Teaching and Training', was conceived to sensitize educators and trainers to the concept of Design Thinking and to encourage them to rethink/revamp their respective course curricula.

Objectives

After participating in this workshop the participants would:

- Understand the various nuances of Design Thinking
- Develop a highly User-centric approach to problem solving
- Apply the tenets of Design Thinking in the subjects that they teach at their respective academic institutions.

Participants

We had 80 (Eighty) participants from five different countries (India, Sri Lanka, Maldives, Bangladesh & Malaysia) registered for these sessions. Majority of them were educators from technical engineering streams, business schools etc. Some were from the corporate training space as well. The list of participants is placed in Appendix 1.

Dates: 8th, 9th, 16th & 29th November 2021 (10:30 am to 12:30 pm)

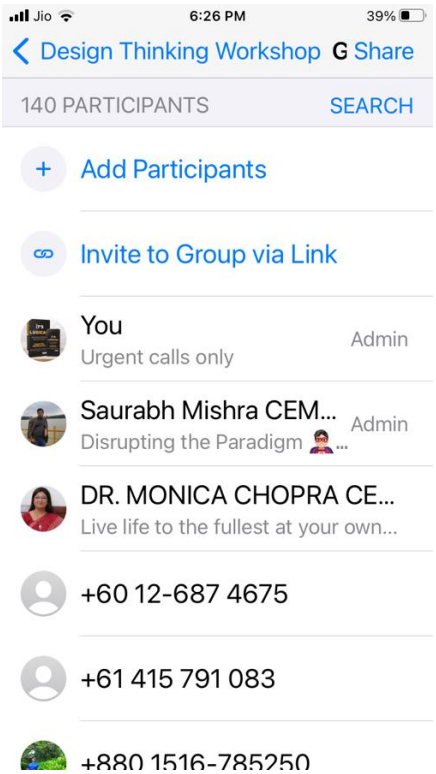
Venue: The workshop was conducted in the online mode through the Zoom platform. The exercises and assignments were given and assessed using Google Classroom.

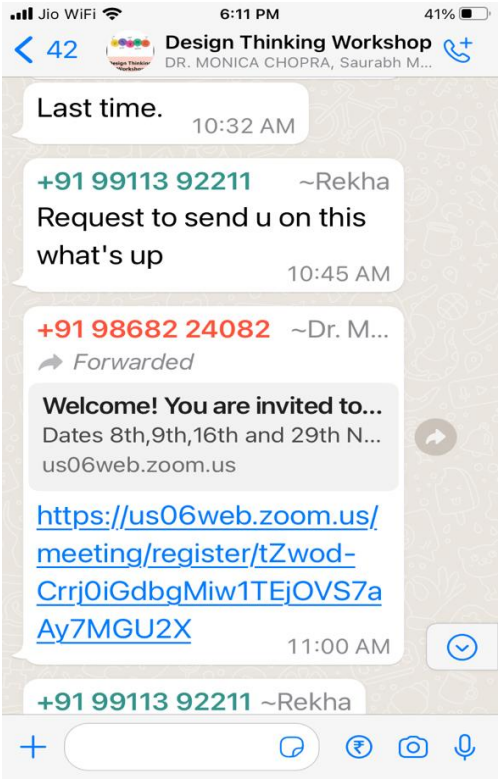
Methodology

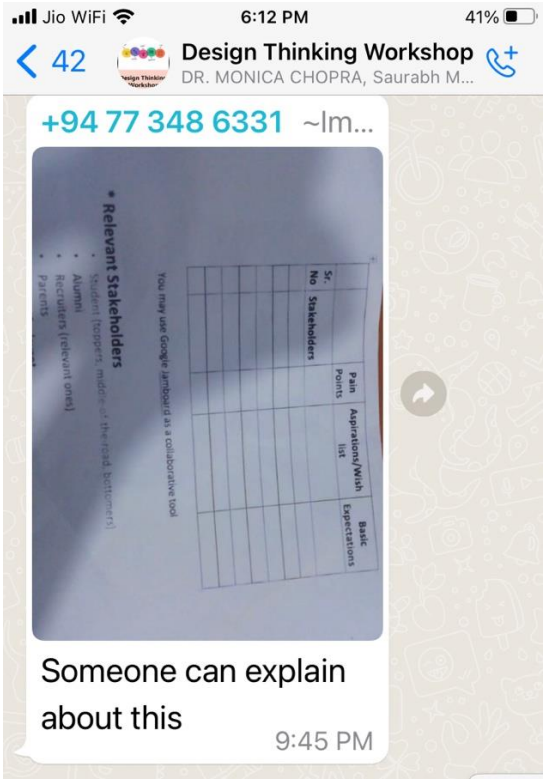
The sessions were conducted on the Zoom platform. Google classroom platform was used to:

1. Create assignments
2. Upload pre-reading material
3. Upload completed assignments by the participants
4. Give feedback to the participants on their assignments

A WhatsApp group comprising the participants, the Master Trainer (Dr. Kaustubh Dhargalkar) and the Program Officer (Mr. Saurabh Mishra) was created to ensure quick and efficient communication between the entire cohort.







There was active participation from all the participants in the cohort on this platform.

The Pedagogy of conducting the sessions

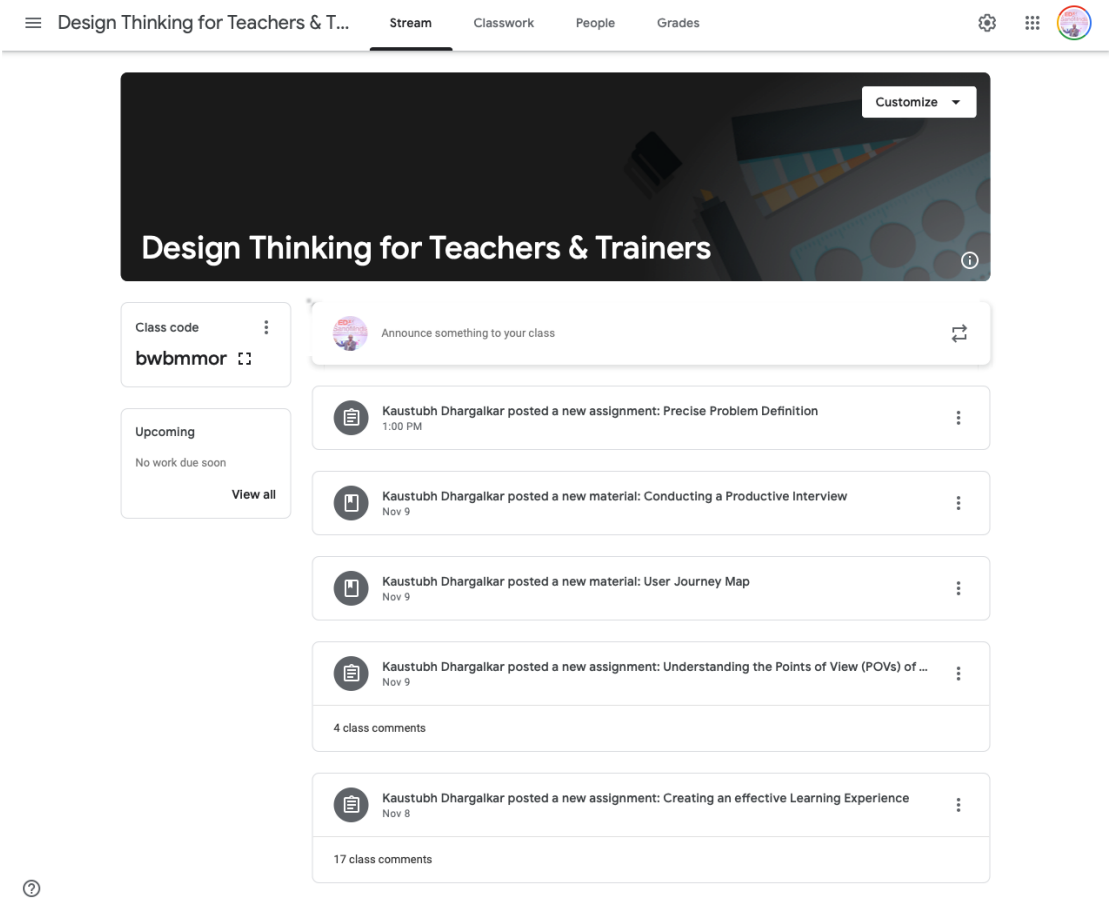
Dr. Kaustubh Dhargalkar used the following methodology:

Stories → Mindset creation → Conceptual framework → Application

Dr. Kaustubh shared his experiences of applying Design Thinking in various industry domains and in the courses that he teaches at various business and technology schools, in the form of stories. These stories helped create an open mindset attuned towards possibilities. From these stories, the conceptual framework emerged in the form of learning points. The participants were encouraged to apply the conceptual framework on the assignments.

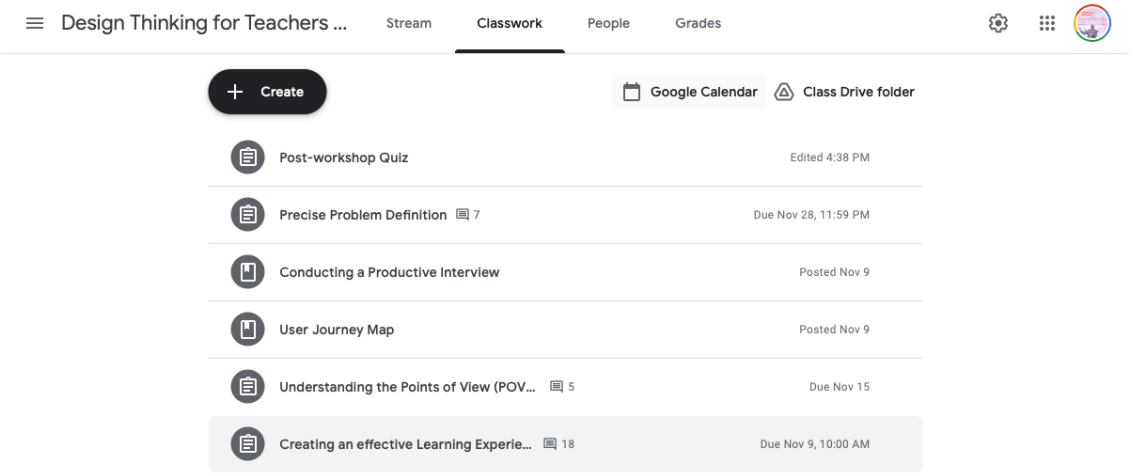
Outcome-driven Assignments were given wherein participants were expected to apply the conceptual framework on 'Live' situations.

The overarching assignment, 'Creating an Effective Learning Experience' was aimed at helping the participants relook at the curricula of the respective subjects they taught or the verticals they were engaged in.



Class Material and Assignments

In all, the participants were asked to submit three assignments during the workshop. Sufficient time was provided to ensure that the participants could work practically on these assignments. The same have been listed hereinbelow.

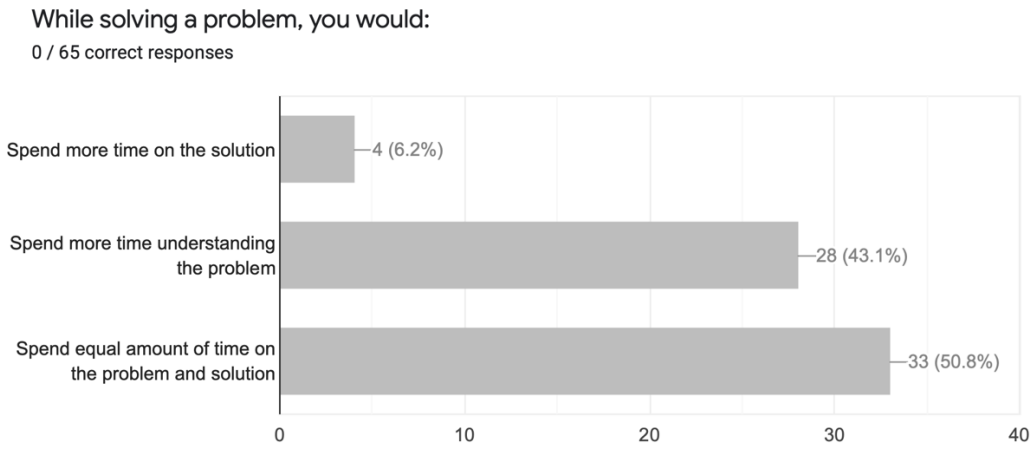


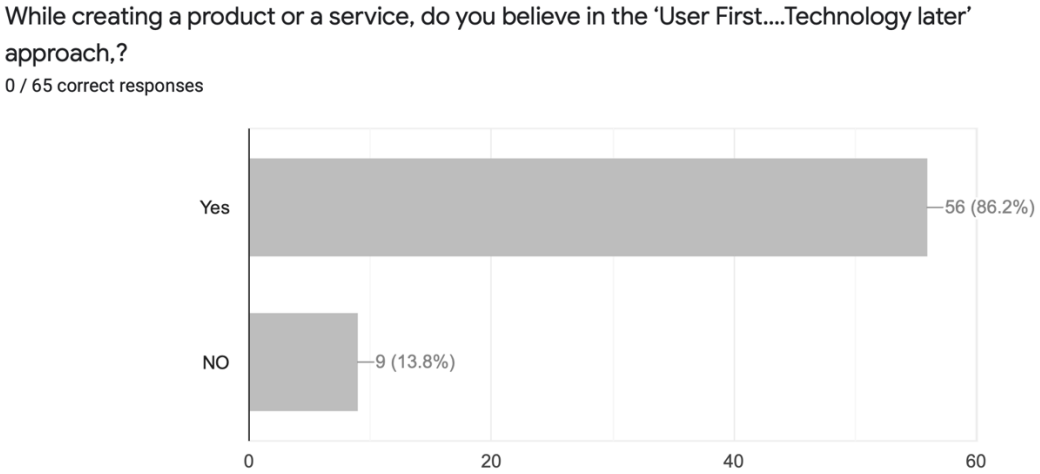
The participants were very diligent and highly participative in the assignment submission.

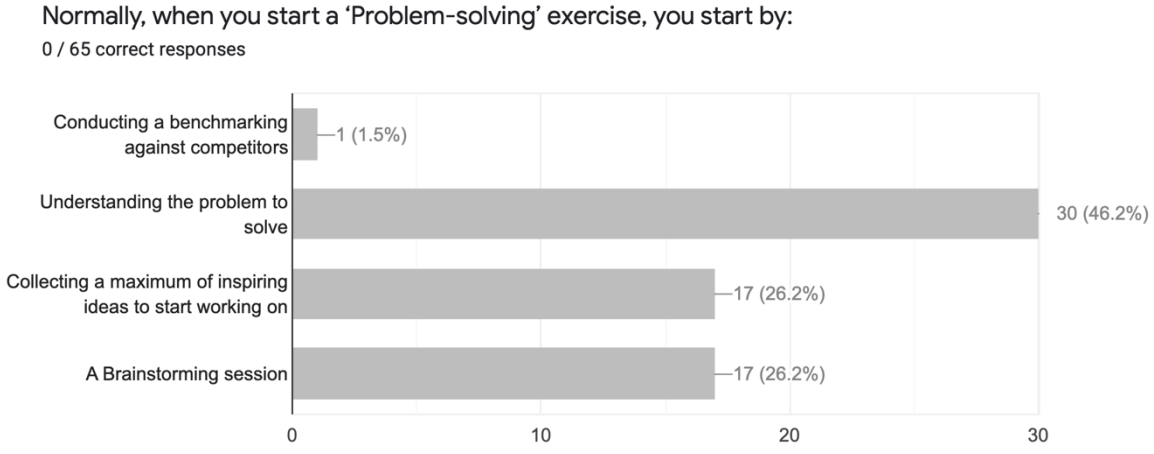
Agenda

Day 1: (November 8th, 2021) What is Design Thinking? Design Thinking in action – a few student initiatives/ventures

Day 1 began with a Pre-Course Quiz to assess the mindset of the participants towards problem-solving. Some of the responses are as shown in the following charts.





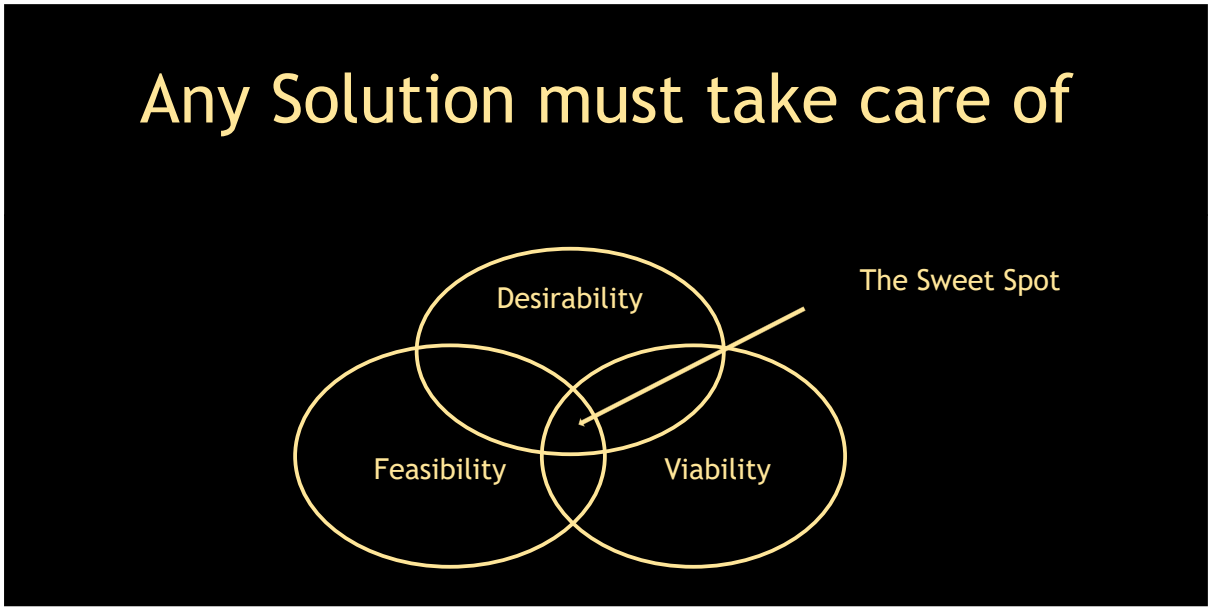


The same questions were repeated after the workshop to check whether the approach towards problem solving had changed. The results of the same are shared later in this report.

Dr. Kaustubh began by sharing examples from his teaching career about students who had created interesting products and ventures from class assignments. One such example was about how a student group had created a device for differently abled (individuals with speech and hearing impairment) and how two students took that idea forward and created a valuable venture around that product. The journey of the students proved to be an inspiration to all the faculty participants about how to encourage students in the classroom and mentor them on the way to creating interesting, market-friendly offerings.
From this example and another one (by another student), key learning points were derived. These 'Learning points formed the basis of the 'Conceptual framework' that could be replicated in the classroom by any faculty. The key learning points were as follows:

- Last-mile user connect
- Account for extreme scenarios
- Strive to attain the Sweet Spot
- Map the entire ecosystem
- Create Win-Win scenarios

*The key characteristic of a solution 'Attaining the Sweet Spot' between Desirability, Feasibility and Viability was very beautifully captured through the two student venture journeys

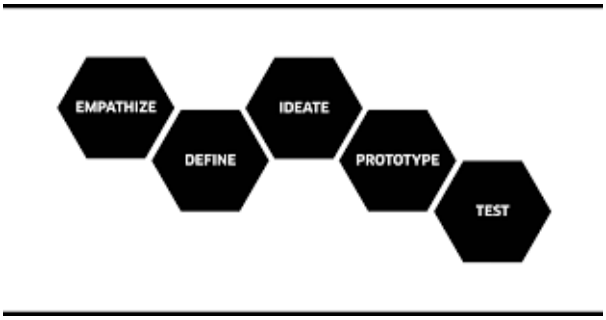


Both the examples induced a lot of interaction from the participants. Multiple, interesting questions led to a lively discussion through which various aspects of 'Design Thinking' came forth. This helped set the tone for all the four days of the workshop.

The theoretical construct of Design Thinking was later explained by Dr. Kaustubh through a typical experience of a young student at any Design School.

"Design thinking is a highly user-centric approach to problem solving that is exploratory and iterative in nature"

Without the need for any definitions and theoretical jargon, the concept of Design Thinking was imbibed by the participants, with great ease. The various steps involved in the Design Thinking process were discussed at length.



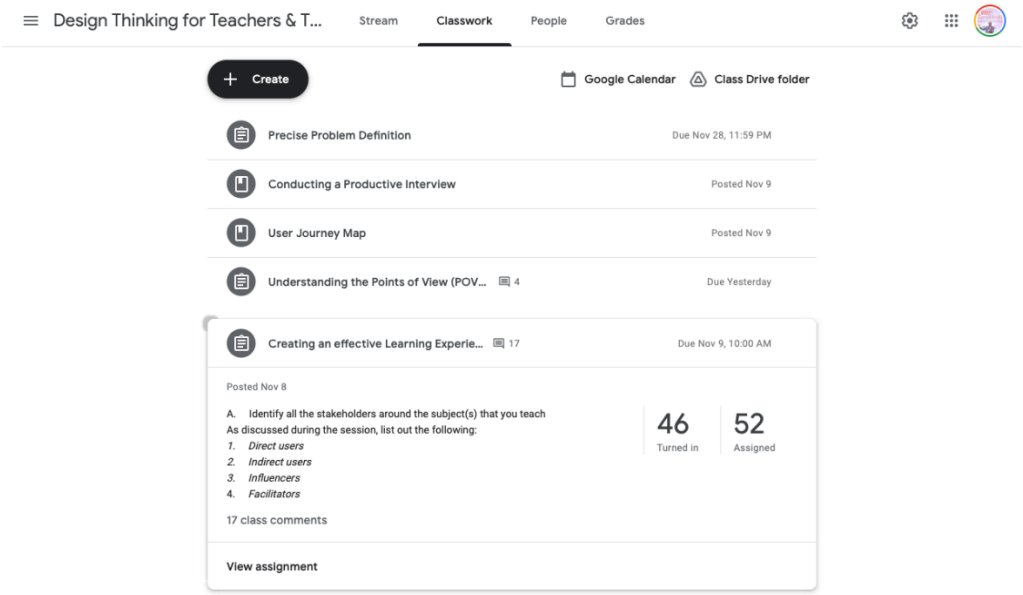
At all times, during the session, the emphasis was on practical application of the concepts discussed.

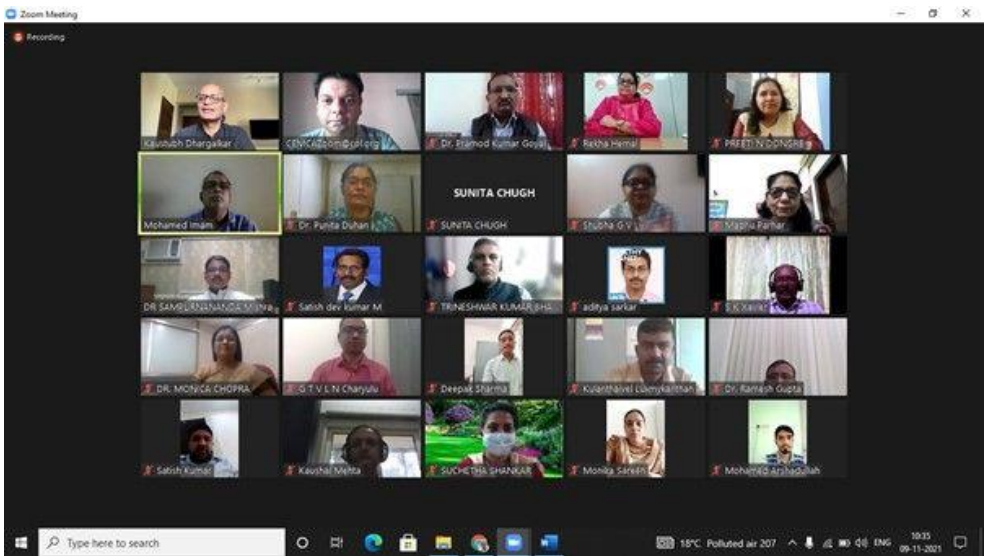
The first step of Design Thinking, i.e. Empathize, began with the concept of 'Ecosystem Mapping. An exercise was conducted during the session wherein participants were asked to

list out the stakeholders of a ‘Pavement/Footpath’. This object was chosen to ensure that every participant could relate to the concept. This exercise generated a lot of discussion and debate and hence drove home the concept of ‘Ecosystem Mapping’.

With this lively debate, day 1 ended with the participants being given milestone 1 for their assignment,

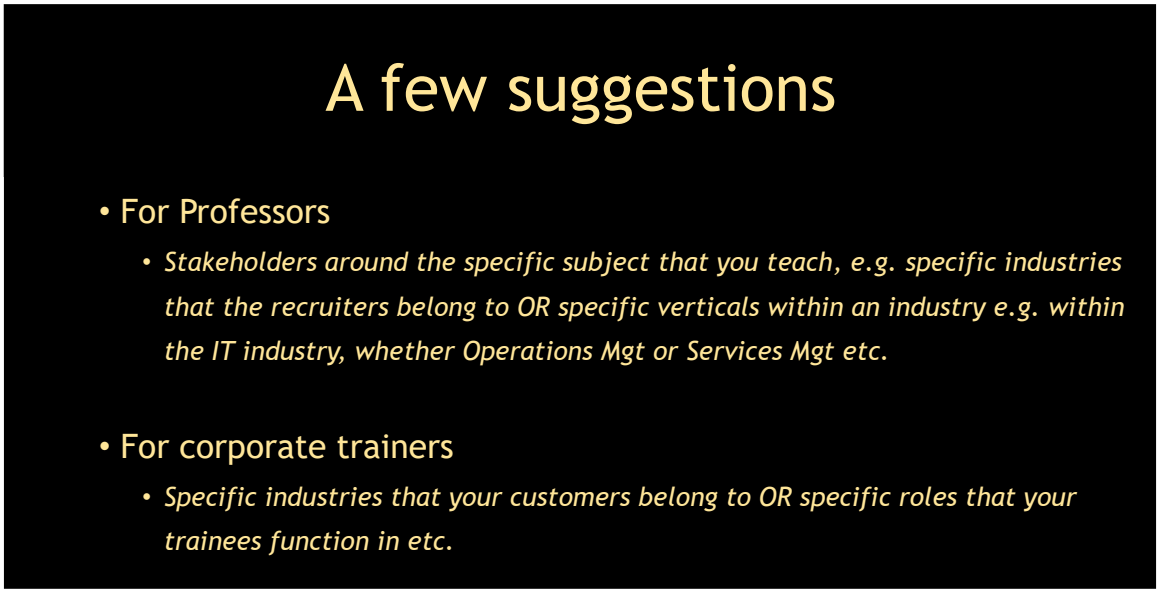
Milestone 1 – “Identify all the stakeholders around the subject(s) that you teach”





Day 2: (November 9th, 2021), Empathy & Last-Mile-User-Connect, Creative User Research Techniques for establishing the same.

Day 2 began with a recap of the learnings from Day 1 and a feedback on the first assignment. Dr. Kaustubh had gone through all the submitted assignments and had given feedback to every participant on their submission. To reiterate the same, he pointed out some common points that the participants could look at in order to upgrade the output of the first assignment.



After having created an 'Ecosystem Map' on day 1, the agenda for day 2 was establishing empathy with relevant stakeholders to understand their points of view, first hand. In Design Thinking parlance, the 'Empathy' stage was explained and discussed in detail. In order to empathize with all the relevant stakeholders, various Creative User Research techniques were explained with examples during the session.

The concept of Last-Mile-User-Connect was explored in detail, wherein the significance of understanding user behaviour in the context of the user's natural environment was stressed upon. This is an important aspect of the design thinking process to create products or services with strong product-market fit.

For interpreting the Points of View (POVs) of users, it is necessary to understand their

1. Basic expectations
2. Pain Points/Complaints
3. Aspirations & Wish list

To explain the significance of understanding pain points, Dr. Kaustubh shared his experience with students at a business school, where in they had collected 56, 461 (Fifty Six thousand Four hundred Sixty One) pain points across 23 different sectors. The collection and display of these pain points led to the creation of 33 (thirty Three) revenue-earning, student start-ups on that campus over the next five years.

Creative User Research Techniques

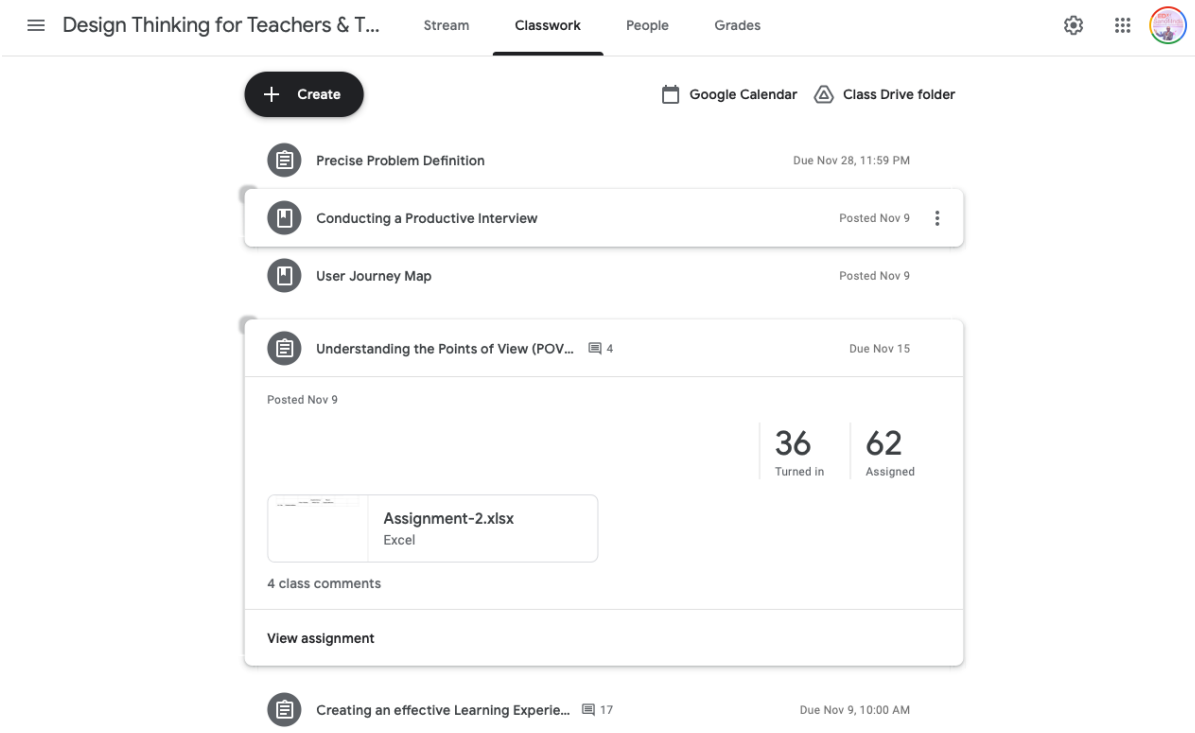
Observing and interacting with relevant stakeholders are best ways to garner insights about their basic expectations, pain points and aspirations. The following techniques were explained with relevant examples to the participants, so that they could apply the same and teach them to their students while attempting to solve problems:

1. In-depth Interviews
2. Rapid Ethnography
3. User Journey Mapping
4. Gamification of User Research

All the abovementioned techniques were explained using a combination of relevant examples and in-session exercises. This gave the participants a hands-on experience of the various techniques and the confidence that they could use them while solving problems in the future and also equip their students with these techniques.

At the end of day 2, the participants were assigned the next milestone of their assignment, ***'Understanding the Points of View of the relevant stakeholders'.***

The participants had one week between day 2 & day 3 to interact with relevant stakeholders to understand their Points of View (POVs)


Design Thinking for Teachers & T...
Stream
Classwork
People
Grades
Create
Google Calendar
Class Drive folder
Precise Problem Definition
Due Nov 28, 11:59 PM
Conducting a Productive Interview
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User Journey Map
Posted Nov 9
Understanding the Points of View (POV...
4
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62
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Assignment-2.xlsx
Excel
4 class comments
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Creating an effective Learning Experie...
17
Due Nov 9, 10:00 AM

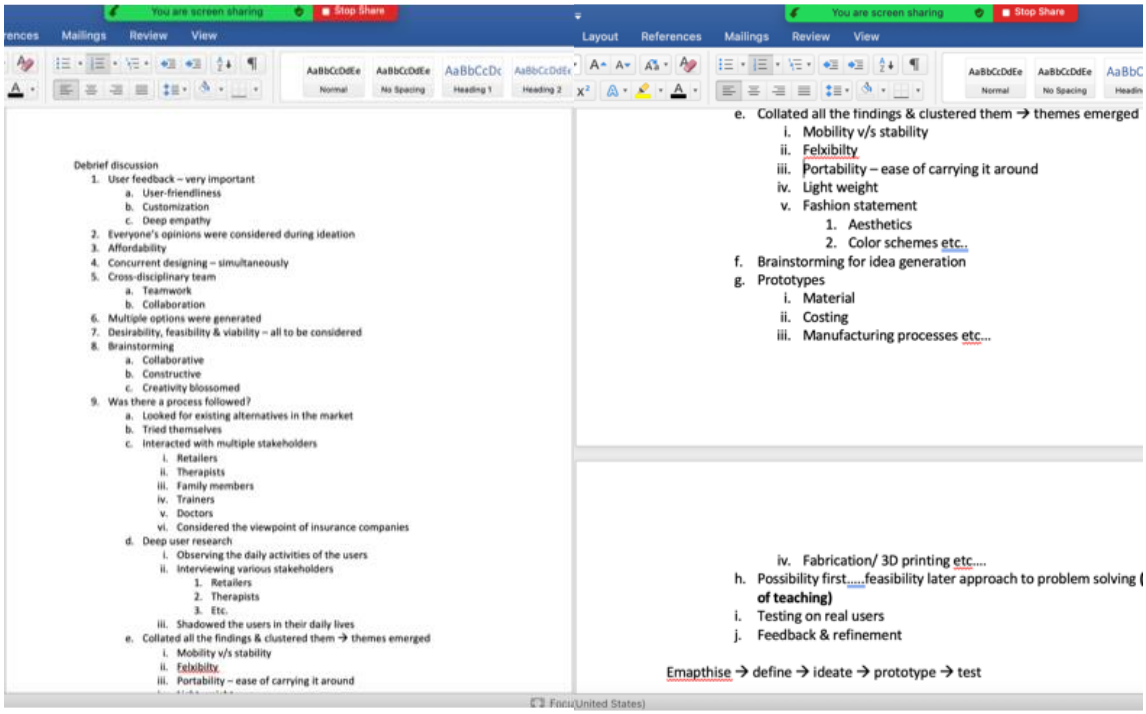
Day 3: (November 16th, 2021), Understanding the Process/Methodology of Design Thinking, Clustering, Problem Definition and Design Brief Creation

Day 3 began with a recap of the first two days. Participants responded enthusiastically with their experiences. Dr. Kaustubh shared his feedback about the submissions of the participants.

To help the participants understand how to apply Design thinking while creating a product/service or upgrading an existing one, Dr. Kaustubh shared two case studies:

1. A video of recreating a 'Walker' used by elderlies and people with disability from MIT's (Massachusetts Institute of Technology)
2. A study aimed at suggesting improved Medical Emergency Response with the backdrop of the 26/11 terror attacks in Mumbai (26th November, 2008).

Both the case studies brought important aspects of the process to be followed while applying the Design Thinking methodology while solving a REAL problem. A very robust discussion followed these case studies which , in turn, helped the participants understand the nuances of the Design thinking methodology.



The participants could understand the significance of various tenets of Design Thinking that were already discussed during the previous two days such as:

1. Ecosystem Mapping
2. Depth Interviews
3. User Journey Mapping
4. Deeply user-centric approach to problem solving
5. The sweet spot between Desirability, Feasibility & Viability.

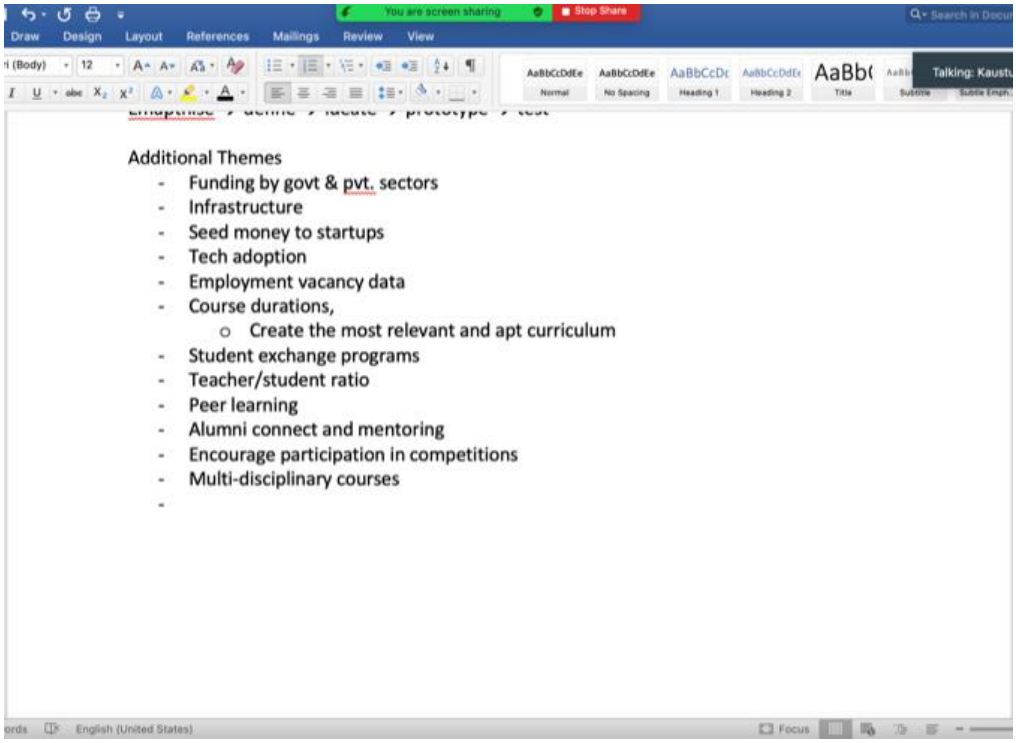
The discussion on the case studies led to the further topics for the day, i.e. **Clustering, Problem Definition and Design Brief Creation.**

Clustering is a process that helps identify broad themes or clusters under which the various observations & insights fall. Similar issues are brought together to form clusters and each cluster gives rise to high-level theme that needs to tackled to solve a problem.
Dr. Kaustubh picked up the observations of all the participants (from the submissions of milestone 2) and demonstrated how clustering is done in practice. He had identified the clusters as depicted in the following image.

A few relevant themes *(from your subm*
There would be many more

Theme	Stakeholder involved
Soft-skills development	Industry, Students
Lack of practical knowledge	Industry, Students
Outdated curricula	Industry
Career counselling	Students
Industry-Academia connect	Faculty, Industry,
Self-paced, personalized learning experience	Students
Parental involvement	Faculty
Seamless hiring process	Industry

Dr. Kaustubh then asked the participants to add on to the themes that he had identified and they led to a very lively discussion through which more themes got identified as seen in the image below



Additional Themes

- Funding by govt & pvt. sectors
- Infrastructure
- Seed money to startups
- Tech adoption
- Employment vacancy data
- Course durations,
  - Create the most relevant and apt curriculum
- Student exchange programs
- Teacher/student ratio
- Peer learning
- Alumni connect and mentoring
- Encourage participation in competitions
- Multi-disciplinary courses
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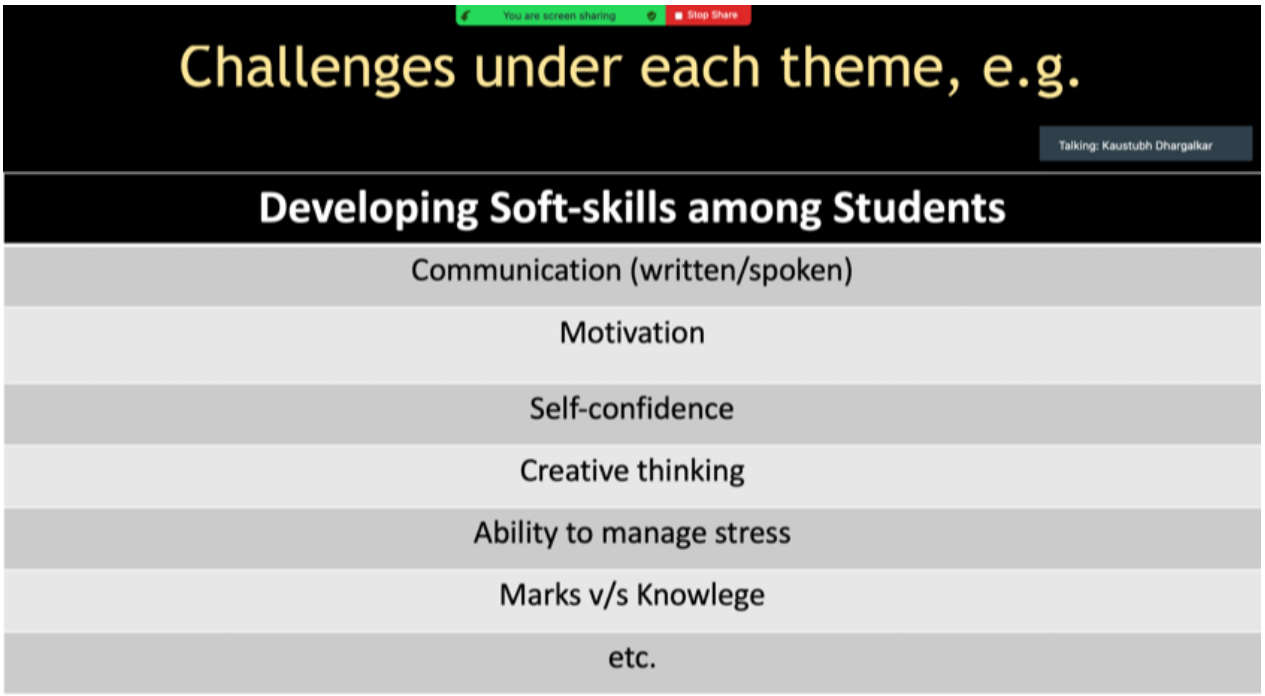
Design Thinking lays high emphasis on defining the problem correctly, from the users' perspective. Under each of the themes identified by Dr. Kaustubh helped the participants define the problems correctly. A sample of that exercise is as seen in the image below



The participants were then asked to create such lists for the other themes too.

Once the problem definition is done correctly, it helps create a sharp Design Brief.
Design Brief is a document that comprises the criteria that the final solution must meet. A tightly conceived, crisp Design Brief is an important component of the Design Thinking methodology, since it identifies the exact problems to be solved. A great Design Brief is always preceded by an immersive user research. While discussing the importance of the Design Brief, many participants realised that they needed to dive deeper into their milestone two (submitted previously). They pledged to repeat that exercise in more depth. This was vindication of the involvement of the cohort and an indication of the success of the workshop thus far.

This discussion helped the participants narrow down on the challenges they needed to tackle to achieve the overarching objective of the workshop,

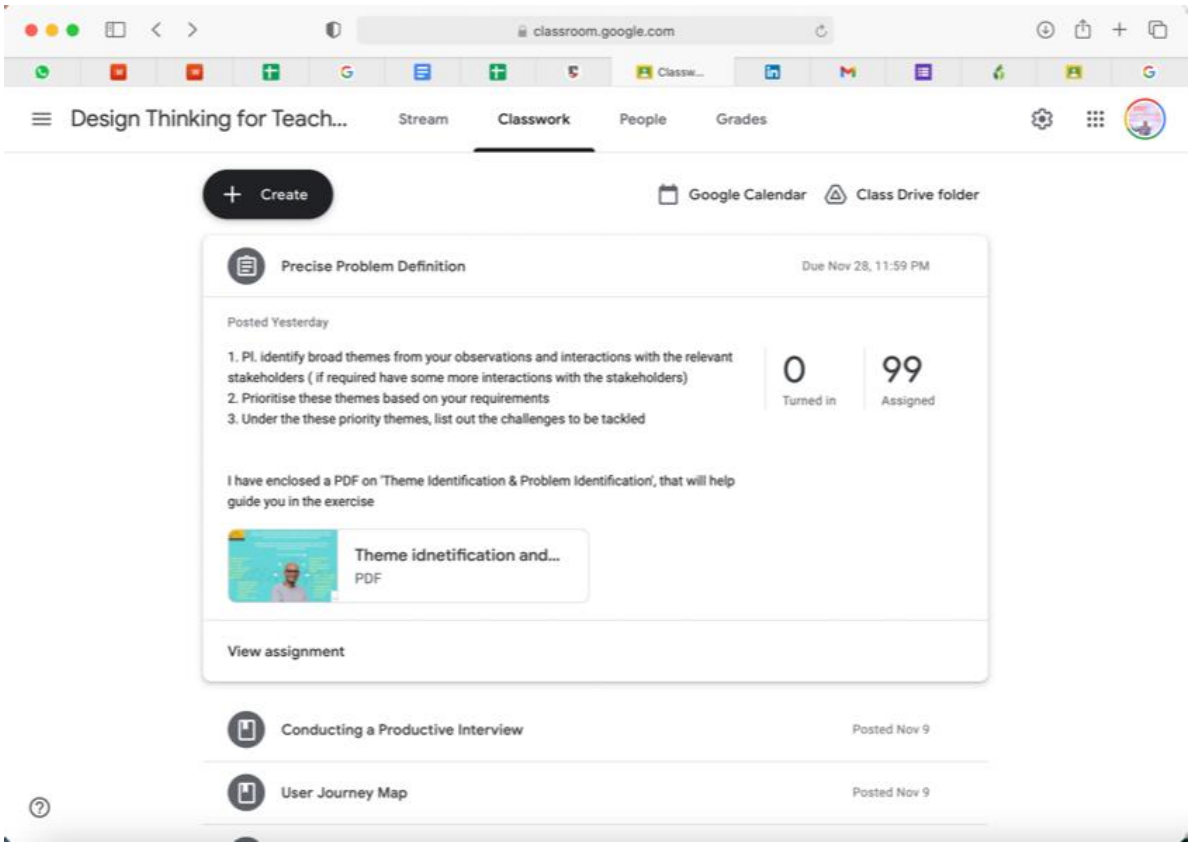
'Creating a Curriculum incorporating the tenets of Design Thinking'

The discussion also helped the participants realise that they needed to do more immersive stakeholder understanding and that they should reconnect with the relevant stakeholders to get a deeper understanding of the challenges to be tackled.

Day 3 ended with the participants being assigned the next milestone,

'Identify Broad Themes and Challenges therein'

In addition to this, the participants would also reconnect with the relevant stakeholders to better understand their Points of View

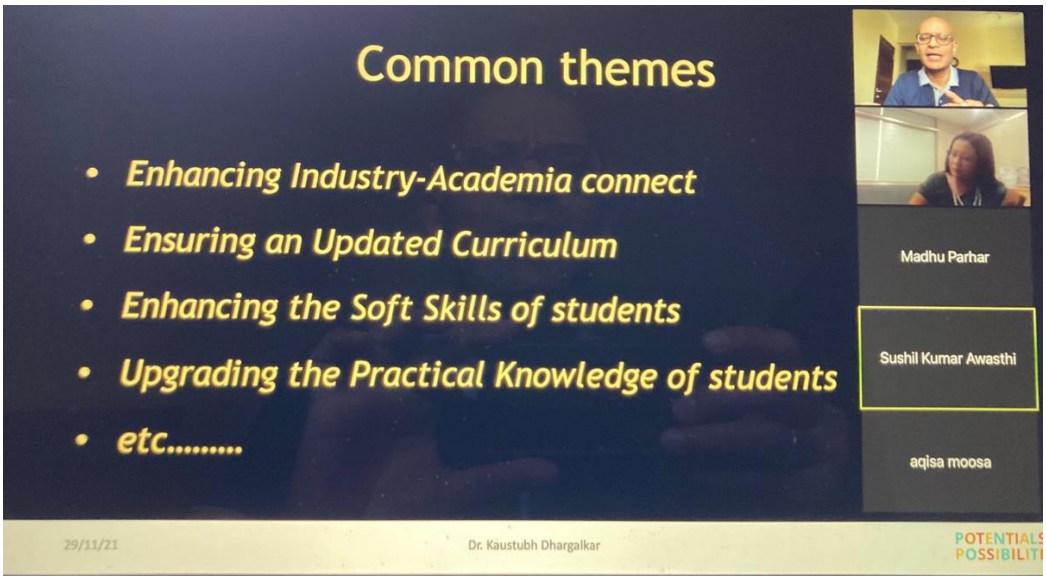


Day 4: (November 29th, 2021), Prioritization, Structured Idea Generation and Conclusion

Day 4 began with a recap of the first three days. Participants narrated their experiences of interacting with more stakeholders. Dr. Kaustubh shared his feedback about the submissions of the participants.

The agenda for Day 4 was about helping the participants to generate ideas to overcome the challenges that they had encountered in their endeavour to upgrade curricula at their respective institutions.

After going through the submissions of the participants, Dr. Kaustubh had created a list of the most commonly occurring themes.



The participants were not restricted by the abovementioned themes, they were granted the freedom to choose the themes as per their priorities.

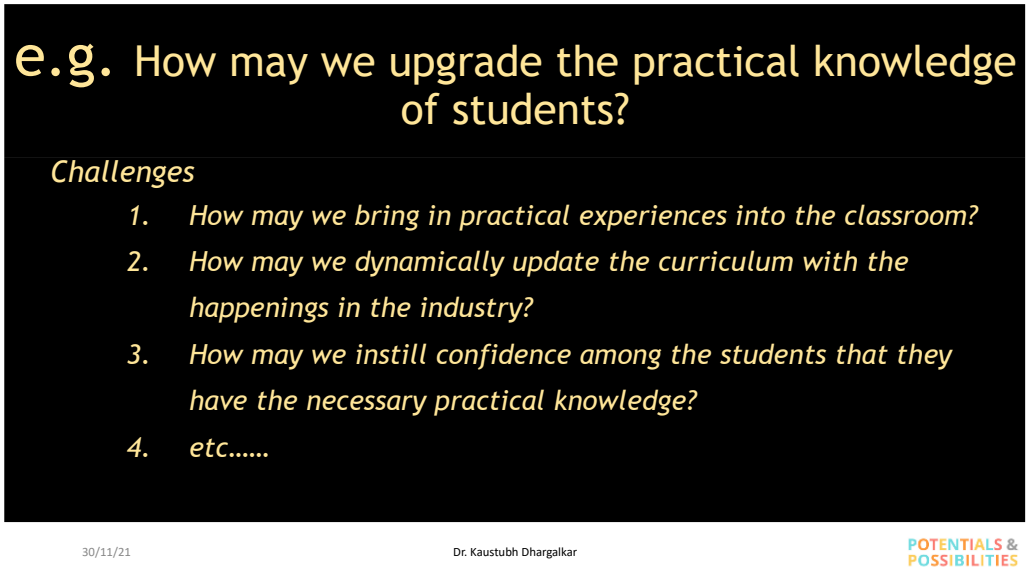
Dr. Kaustubh then asked the participants to go through the various themes that they had identified to be tackled and prioritise them on the basis of either of the following parameters:

1. Degree of Importance (to the individual/institution)
2. Degree of difficulty {assuming the participants had attempted earlier (prior to the workshop) to tackle the same}

A five-minute timeout was provided for the participants to analyze their findings and decide on their respective priorities.

Once the prioritization was completed, Dr. Kaustubh asked the participants to pick the the most important theme to be tackled and announced that for the day, that theme should be focussed upon.

The participants were then asked to list out the various challenges under the chosen theme in the form of ‘How May We?” questions

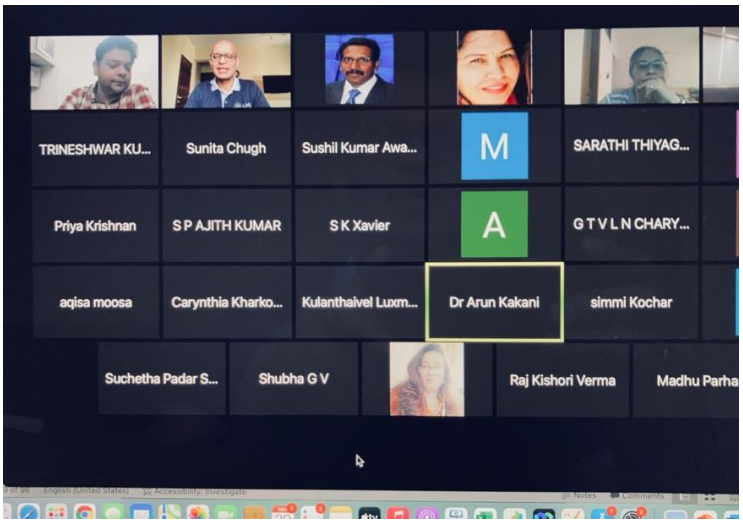


Dr. Kaustubh then introduced the participants to the paradox of a structured ideation process. Paradox, because it is generally said that great ideas originate from creative sparks here and there. However, a team cannot always depend on the creative genius of individuals. There has to be a mechanism to enable the entire team to stretch the power of their imagination to be able to visualise breakthrough concepts.
Moreover, the significance of a structured process is that, many a time when teams gather for an Ideation cum brainstorming session, such discussions tend to go astray with a lot arguments flying around. In order to avoid such situations and lead the team through a constructive brainstorming exercise, a fairly structured approach to ideation helps.

Broadly, a structured ideation process goes as follows:

1. Unconstrained ideation – *Letting the creative juices flow freely, letting the imagination fly wild. Thinking without constraints*
2. Generating and choosing the most promising idea(s) – Keeping the promise and impact of the idea rather than the feasibility while choosing the idea(s) to act upon
3. Seeking the information– once the promising idea(s) are chosen, one has to seek the information/knowledge required to make it feasible and executable
4. Puncturing holes – Looking out for elements that might lead t. o failure of the idea when executed
5. Creating a pitch for the idea/concept in order to convince superiors/sponsors/investors etc. – Focussing on the benefits, value and long-term impact of the executable idea.

At each of the abovementioned stages, the participants were given a timeout ranging from 5 to 12 minutes to think on the challenges listed out. Each timeout was followed by a interaction with the participants to guage whether they were following the instructions and generating the requisite output. Some of the participants were happy to share their concepts.



A few sample ideas/concepts generated were as follows:

1. **Theme: Enhance student interest in the curriculum**
   Concepts generated:
   a. Co-create the curriculum with the students every year taking into account their expectations
   b. Seek student inputs in the evaluation mechanism by letting them create the same.
2. **Theme: Enhancing Industry-Academia Connect**
   Concepts generated:
   a. Orientation programs for faculty by industry executives, every six months to expose faculty to the latest industry trends
   b. A platform wherein Industry displays its challenges and a follow-up exhibition (to be held every six months) of the solutions of those challenges, created by students and academia. Such a mechanism should be a continuous one held year-on-year, in the respective regions/geographies of academic institutions.

Many more such interesting concepts were generated by the participants. Dr. Kaustubh encouraged participants to share their ideas/concepts to ensure peer-to-peer learning. As a result, the participants benefited immensely from each other's knowledge and efforts.

During the session, only one theme and its associated challenges were picked up for idea generation and concept creation. The participants understood the structured approach to idea generation, which they could apply on other relevant themes at their end.

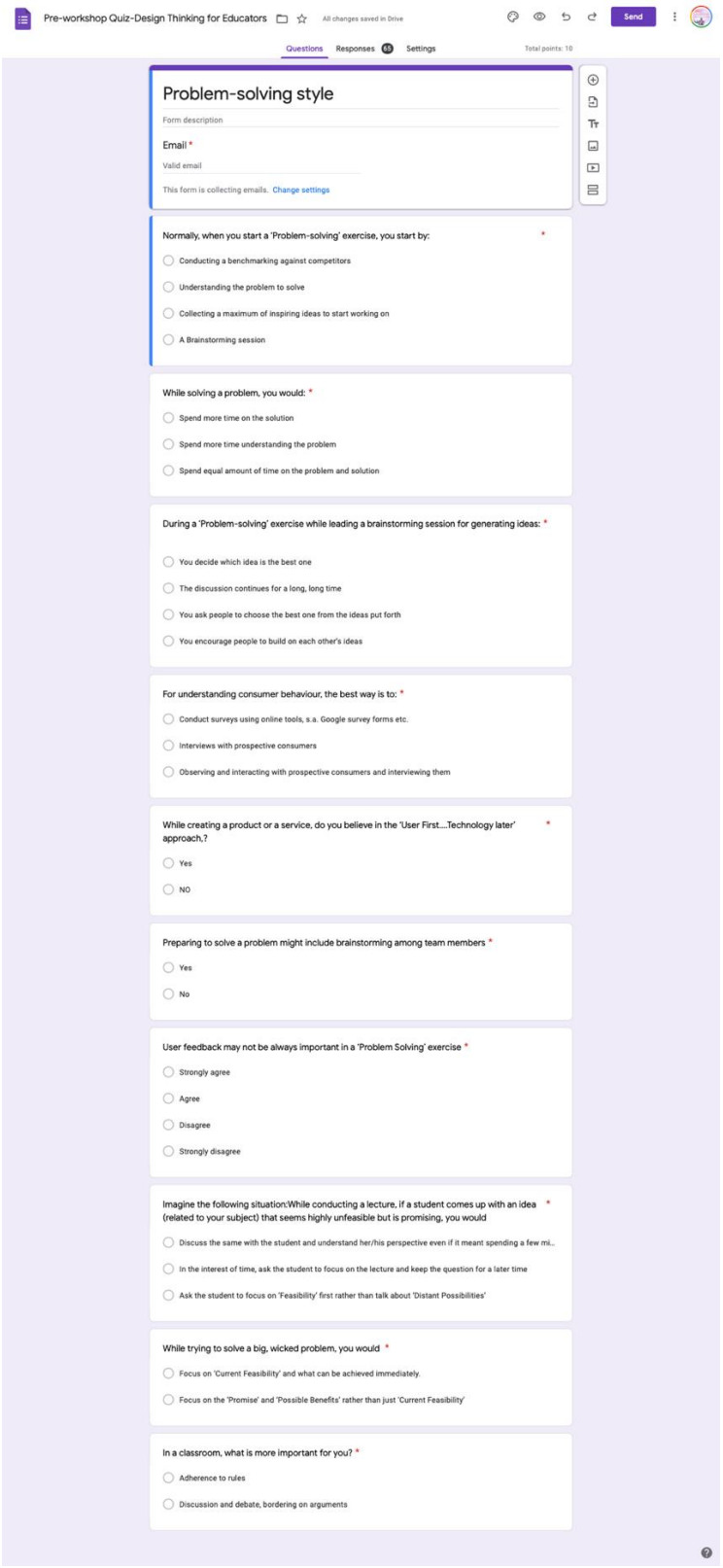
Dr. Kaustubh then corelated the design thinking methodology used in the curriculum upgradation process in six clear steps as follows:

1. List out all the stakeholders involved
2. Deep interactions with the relevant stakeholder
3. Understand the Points of View (POVs) of the stakeholders
4. Themes of challenges will emerge
5. Structured Ideation
6. Prototype and Test it in phases

During the four days of the workshop, the participants experienced the first steps till 'Structured Ideation'. The sixth step has to be initiated by the participants at their respective institutions at smaller scales and going through multiple pilot iterations before scaling up.
It was proposed that the Google classroom and the WhatsApp group could be continued to facilitate further conversations among the cohort. Through these platforms, the participants could share their experiences about their trials and experiments that they would carryout at their respective institutions. Thus, we can ensure a process of 'Lifelong Learning'.

Measuring the effectiveness of the workshop

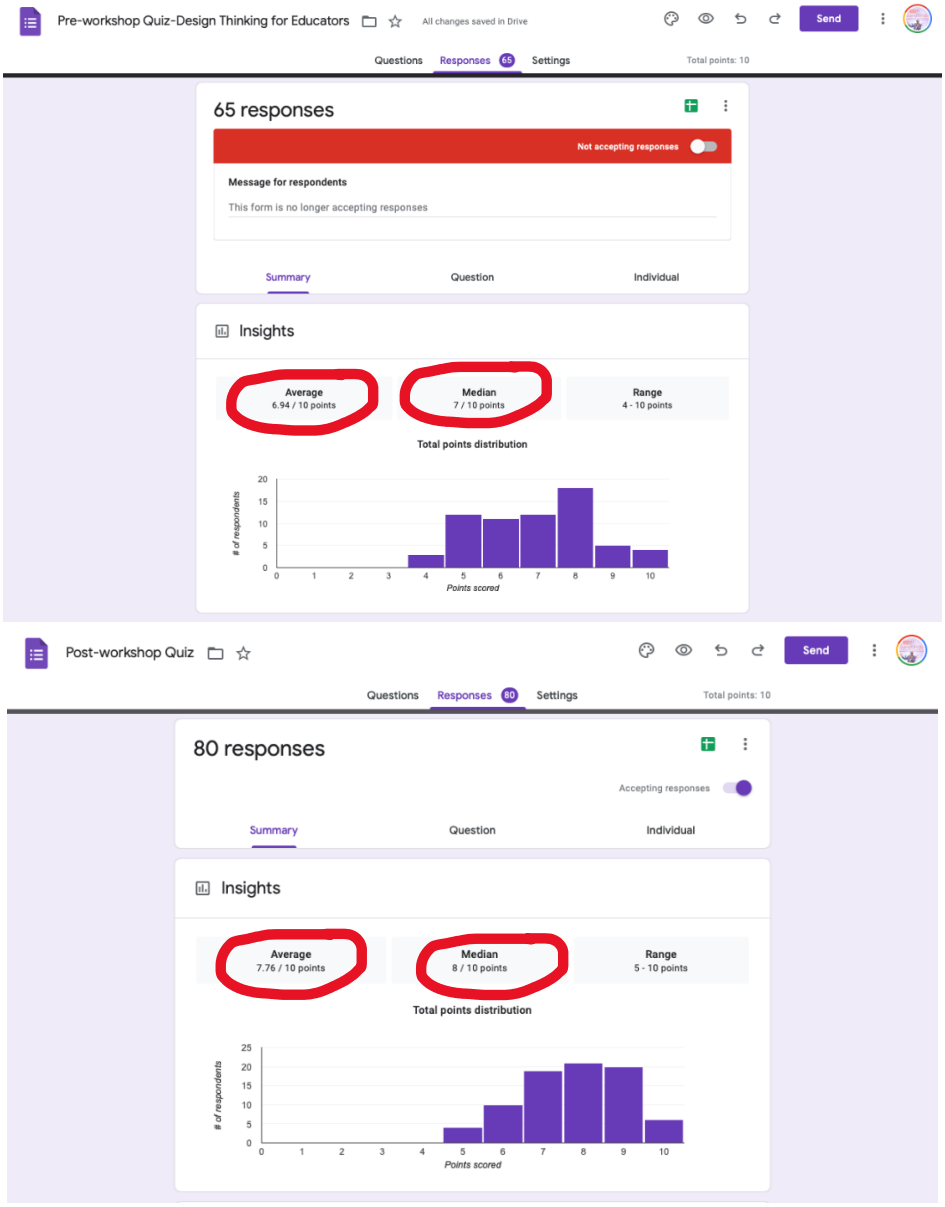
The participants were asked to respond to a questionnaire, before the workshop, to understand their approach towards ‘Problem-solving’. The questions were designed to guage their tendency to use the tenets of Design Thinking in their ‘Problem-solving’ approach. The questions were as follows:



The answers to the questions were not revealed to the participants, so that they would not the correct answers.

The same questionnaire was circulated among the participants at the end of the last day of the workshop to check whether there was shift in the mindset of the participants (towards using the tenets of Design Thinking) in their 'Problem-Solving' style. The sequence of the questions was randomized to ensure a degree of dissociation from the pre-workshop questionnaire.

The results are as depicted below:



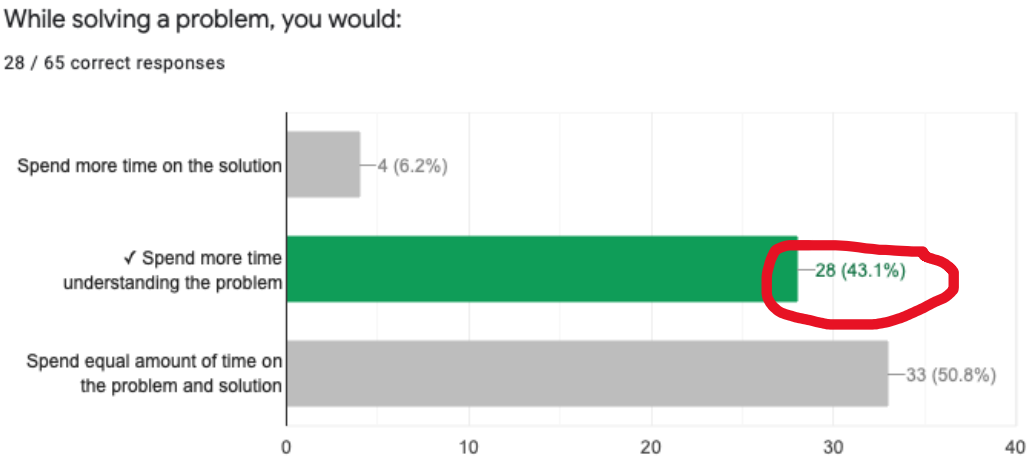
It can be seen from the results,

1. **The average score of the cohort increased from 6.94 to 7.76** on using the tenets of Design Thinking in their respective 'Problem-Solving' styles.
2. The **median score of the cohort has increased from 7 to 8.**

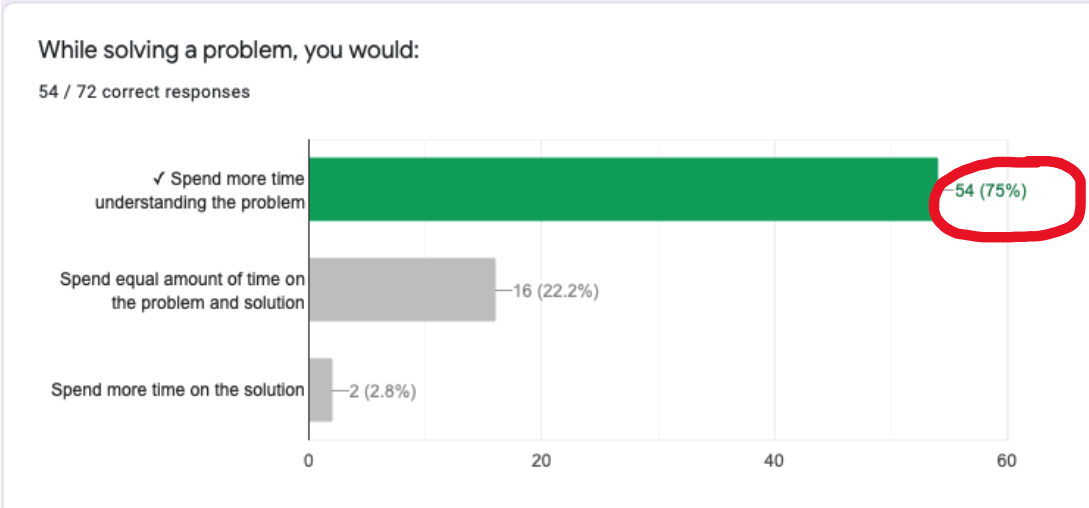
The rise in both the abovementioned parameters is a good indication of the success of the workshop in influencing the mindset of the participants towards Design Thinking.

The most significant finding was that **the participants displayed a significant shift from being 'Solution-focussed' towards becoming 'Problem-focussed'** as can be seen from their responses to the following question. Being solution-focussed often leads to short-sighted solutions, being problem-focussed leads to holistic solutions. It ensures that the problem-solving approach focusses on deep & immersive user research. **The shift is highly significant from 43.1% to 75%**

Pre-workshop responses



Post-workshop responses

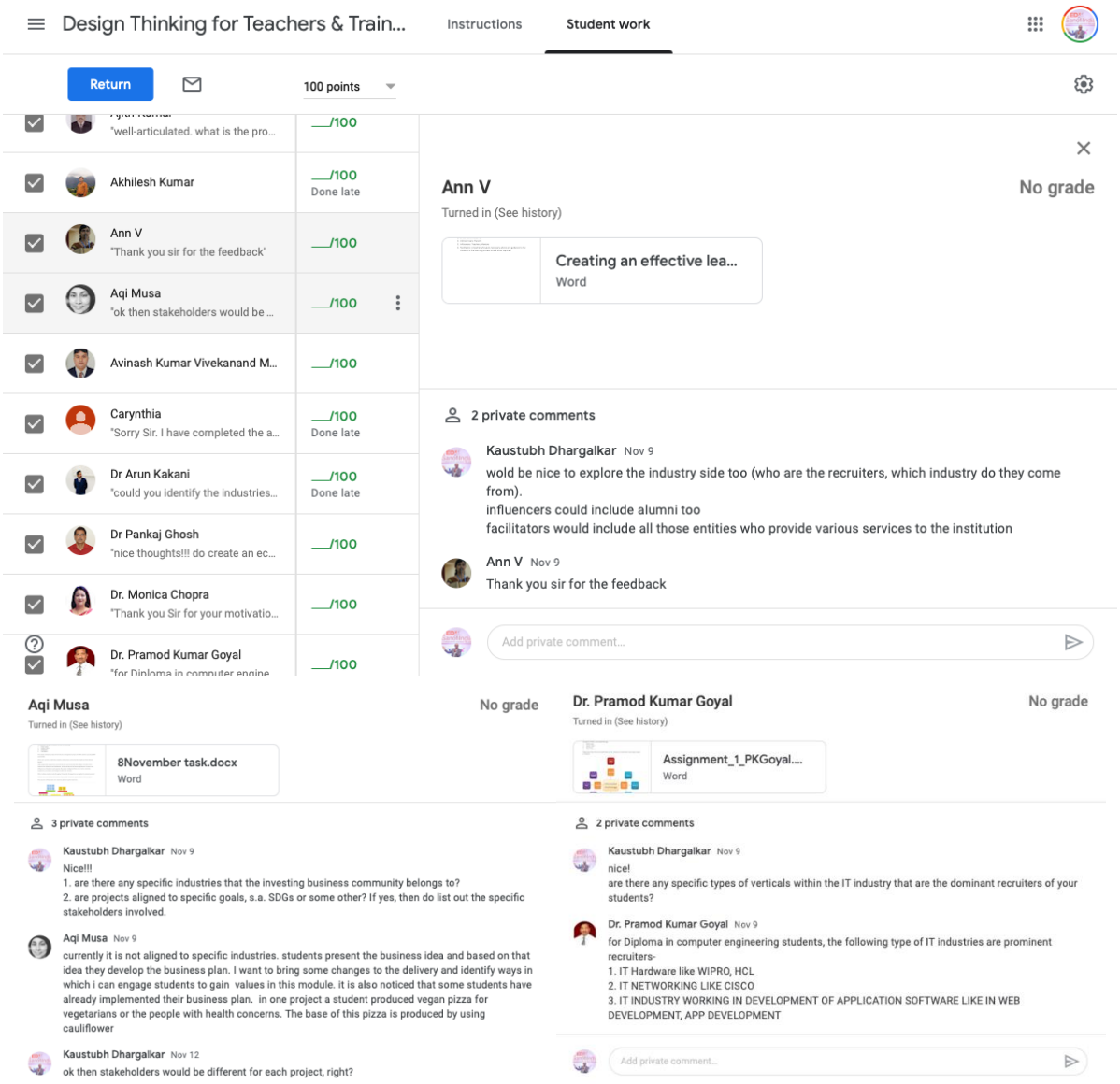


Performance of the participants during the workshop

Assignment submissions

1. 48 participants submitted the assignment
2. 44 participants submitted the assignment
3. 39 participants submitted the assignment

Each participant who submitted the assignments was provided with feedback by Dr. Kaustubh



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