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A JOURNEY FROM SCALE TO EPICS : TRANSFORMATIVE YOUTH AND ENGINEERING EDUCATION : TOWARDS A SUSTAINABLE FUTURE

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ABSTRACT

The main aim of the IUCEE SCALE (Indo Universal Collaboration for Engineering Education- Student Consortium for Advancement and Learning in Engineering Education) workshop is to bring the different kind of student together to form as teams and working on ideas based on the design thinking process. Also make them work in a theme & various tracks, later developing action plans, which can be implemented too. We have chosen most of our students to participate in this workshop. Totally 150 students were participated from different branches of our institute alone. The students got to learn a lot from various activities, debates, brain storming sessions and much more. Fun activities are always a part of these amazing workshops. Finally our students came out with 30 new innovative ideas and few of those ideas we have implemented for EPICs (Engineering Projects in Community Services). The whole designs of SCALE to EPIC are explained briefly in this paper.

Keywords: *SCALE, EPICs, Transformation, Engineering Education and Design thinking*

1. INTRODUCTION

It was surprising that the felicitators are students. Good morale boosting techniques shown to us and learnt very good communication skills for use with Students and staff From the IUCEE-SCALE has committed to creating a strategic plan for an idea from students belonging from various colleges in India. Together the students came up with an idea to make something more interesting happen for the students wherein they could learn and get more from the regular teachings. The students get to learn a lot from various activities, debates, brainstorming sessions and much more. Fun activities are always a part of these amazing workshops. Students later can also be a part of the SCALE Annual Conference by attending the Regional Workshops. Also the students should to actively involve and to make use of the workshop for doing the projects towards the communities. The Figure 1 shows the participants.

Fig.1: SCALE attendees

2. SCALE THEME & TRACKS

Track 1: Climate Change & Affordable Clean Energy
Track 2: Rural Infrastructure
Track 3: Responsible Consumption and Production

The trained student facilitators Ms. Likitha, Ms.Rakshitha, Mr.Avi Trivedi, were assigned by the IUCEE for functionalize the workshop effectively. Prior to the first day of the workshop (6th September), the facilitators have visited the institute and ensured the preparatory works completed and amenities available for the effective conduct of the workshop. The second day the facilitators grouped the students in to different tracks and the grouped are taken in to the custody of the individual and respective facilitator at which they are specialized. The students were given brief introduction about the theme chosen and they have been given time to prepare for the stage speech to which the idea proposed. The students have been grouped in to team 5 or 6 persons to prepare the idea for the design thinking. The students have been given kits (charts, paper, pencil, pen, sketches, glue, and adhesive tapes and asked to prepare the poster presentation for the proposed design thinking idea for the community service. Then they were presented the poster and are visited by the all the team from different tracks. The poster presentation was evaluated by the facilitators. This made the students come up together with an idea to make something more interesting happen for the students wherein they could learn and get more for the regular teachings.

On the third day forenoon, the students asked to give presentation on their design thinking poster and are finally evaluated by the facilitators. The team members were asked to prepare and present on the final action plan about the implementation of the proposed project. Finally the facilitators elaborated the outcome of the SCALE workshop. The valediction was started at 4.00pm and the students were asked to present their feedback about their experience and learning in the workshop. The students have given very good feedback on their learning experience and method of bringing their ideas for the community service also they have promised to do such kind of the projects for the community service.

3. KEY POINTS AND IDEAS

The Table 1 and 2 below summarizes the key points and ideas related to the current state of SCALE identified by workshop participants.

Table 1 : Schedule of the Programme

Day	key points	Sample of Associated Ideas
07.09.17	Group Discussion	The Discussion included all the students from various inter-disciplinary departments
	Selection of Tracks individually	The tracks have been selected based on new technology and real –time problems
08.09.17	Track wise assignments and discussions	Assignments and discussions helped in assessing an individual actually where we are upto.
	Task related to Innovative Ideas	It's interesting and digged our brain for thinking in an new and good angle of design thinking.
09.09.17	Poster presentation	Implementing the idea in the form of poster, it reflected our paper work, creative thinking and idea towards how customers think if the design is been done.
	Power Point Presentation of their idea	It gave a chance to explore our idea and able to improve our communication skills. We could know that presentation is also important after designing an idea.
	Queries and discussion on prototype	By answering we memorize the work clearly and its loop holes to upgrade.
	Feedback	Getting the results and appreciations, it supports us to improve our design way of thinking. It supports to improve us in better way.

Table 2 : 30 New Ideas from the Workshop

S.No	Name of the Idea
1	Climate control by dump yard
2	Farmers market
3	Rural Infrastructure and Development
4	To convert to tidal energy into electrical energy
5	Quality of food
6	Providing Self Employment
7	Artificial Cloud
8	Solar Handloom
9	Dunee of Industrial gases
10	Providing Electricity
11	Every Drop Counts
12	Sound to electrical Energy conversion
13	Carbon dioxide Capture and storage
14	Life Beats
15	Solution for wastage of food
16	Electricity
17	RE-Power(Consumption of electricity and its effects)
18	Engineering skills and solve climatic conditions
19	To create a remedy for air pollution
20	Education for all
21	Feel cool Bus
22	Renewable Sources
23	Rural Development
24	Prevention of drying Bore wells
25	The MASK
26	To restore agriculture economy through Direct Trade
27	To create Hydraulic Pump for irrigation Purpose
28	To limit the usage of electricity
29	Unnecessary wastage of Electricity
30	Waste management

4. EPICs

- Problem identification from the community partners.
- Working out the solutions for the identified problems.
- Building the prototype.
- Feasibility studies on the implementation of the solutions at the societal level.

The SCALE workshop posters are presented in Figure 2. The students innovative design thinking

ideas are converted as EPICs Projects are shown in Figure 3 and 4.

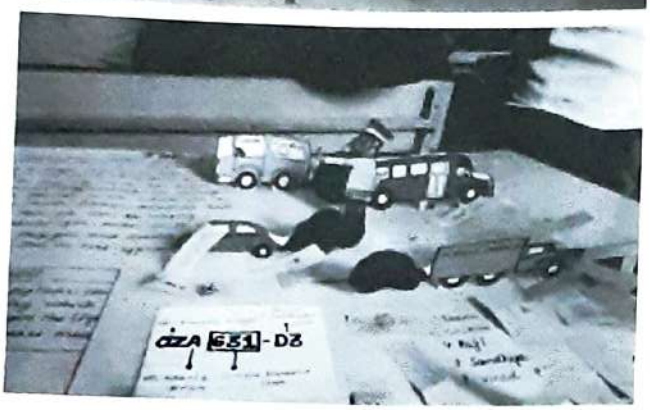

Fig.2 : Some of the Photographs of Ideas from Poster Presentations of the Workshop

Fig. 2 : Usage of Plastic Bottles in Constructions - EPICs

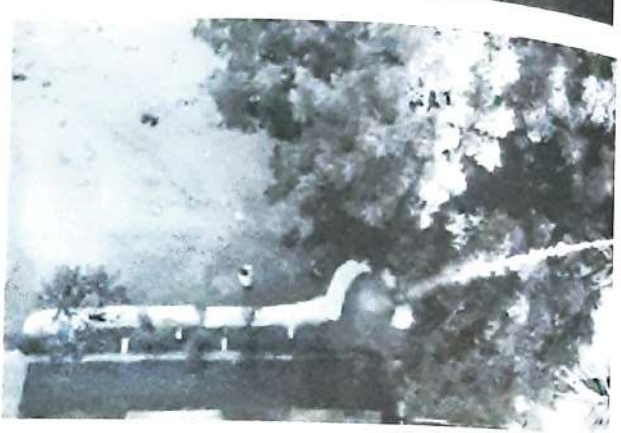

Fig. 4: Rain Water Harvesting and Water Diversion to Plants- EPICs

5. CONCLUSION

Discussion at the workshop identified tracks for sustainable research along with the need to focus and move forward on.

1. Identified the 10 ideas which are to be implemented.
2. Identifying the Community partner (EPICs) which relates to the ideas identified.
3. Implementing the first prototypic model.
4. Trial and error adoption till final model
5. Implementing and testing with customers or community partners.
6. Getting feedback and revising the design of model.

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