

SUSTAINABILITY OF ENGINEERING EDUCATION

I. Survey 1

Survey was conducted to understand the expectations of students from engineering course.

Figure 1 illustrates the response of the students in a survey conducted at Thakur College of Engineering & Technology (TCET) with a sample size of 293 for the question “Engineering education is best learned through”. The response demonstrates that more than 60% students think that engineering is best learned through industry exposure, projects and practical/tutorials. The survey indicates that competent engineers can be trained for challenging environment (which is the need of 21st century) if traditional classroom teaching is inter linked with project based learning. With this as an input TCET has designed a curriculum with beyond syllabus value added courses which stress on learning through projects, laboratory work and visits to the industries including local industries.

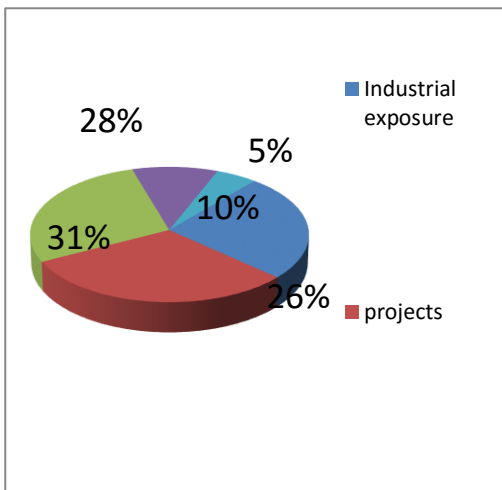


Figure 1: Response of students to the survey questions “Engineering education is best learned through”

Engaging students in not only academics but co-curricular and extracurricular activities should be given importance to ensure overall student development. This can happen when academics along with co-curricular and extracurricular activities are properly planned with SMART objectives and outcomes which needs effective monitoring and control through system based approach.

Figure 2 illustrates the response of the students in a survey conducted in TCET with a sample size of 293 for the question “Extra-curricular / Co- curricular

activities should be given due importance”. The response shows that 91% students **strongly agree and agree** that extra-curricular / Co-curricular activities should be given due importance. Hence the survey suggests that students understand the importance of skills and competencies developed by participating in extra-curricular / Co-curricular activities. Participation in these activities can make them global leaders. Taking this as input TCET stresses on conducting academics, extra-curricular / Co-curricular activities in the ratio 60:20:20 so that there is overall development of students.

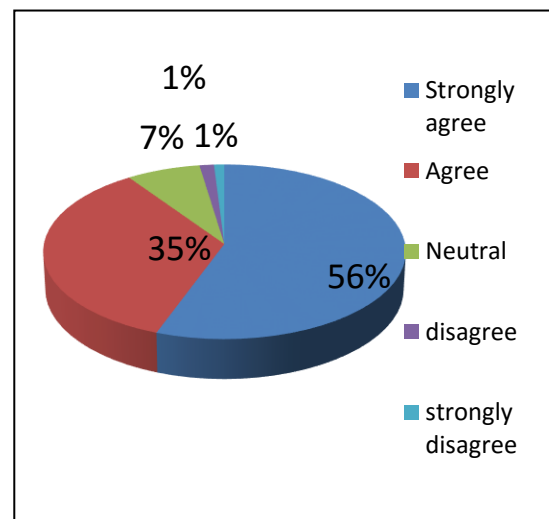


Figure 2: Response of students to the survey question “Extra-curricular / Co- curricular activities should be given due importance”

The suggested model demands the commitment of faculty member with honest and sincere effort to prepare immediate professionals through engineering programmes. Moreover, they are expected to be actively involved in the study and research to update their knowledge , research ability and networking with the institution/industry. At the same time the senior leadership shall work for new vision and its accomplishment by making strategy, defining activities and setting targets & goals. Institution must have strong review mechanism to monitor the accomplishments of goals and developing new learning for bringing improvement and agility of the system.

II. SURVEY II

To understand the practical problems faced by private institutes in Maharashtra (Mumbai) and probable solutions to the problem of sustainability of engineering education.

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A survey was conducted where 74 representatives from various engineering colleges affiliated with Mumbai University provided their views and feedback.

Q.1 Are all your institute's seats of UG programme filled through CAP admission round?

Yes 43 62.3%
No 26 37.7%

a) Location of the institute	13	25.5%
b) CET EXAM is made compulsory	5	9.8%
c) Fee structure of private college is high	12	23.5%
d) Lack of students interested in engineering	32	62.7%

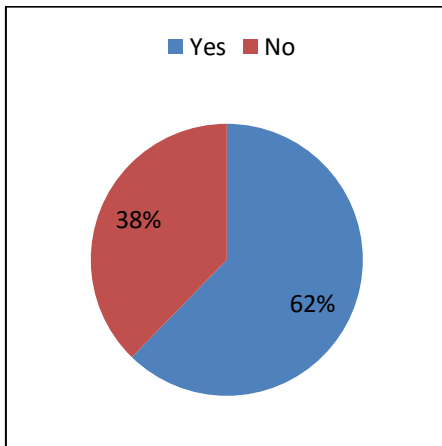


Figure 3: Response to question 1

Figure 3 illustrates that around 40% institutes could not fill their seats through the CAP round in their UG Program which is an alarming number, because if this trend continues the sustainability of the institutes will be impacted.

Q.2 Are all of your institute's PG programme seats filled through the CAP admission round?

Yes 15 28.8%
No 37 71.2%

Figure 4 illustrates that more than 70% institutes could not fill their seats through the CAP round in their PG Program which again is an alarming number because over the past years it is observed that securing candidates for the ME Program is difficult and if the present scenario continues, it will be difficult to run PG programs.

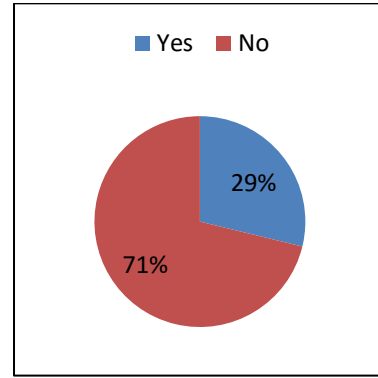


Figure 4: Response to question 2

Q.3 What were the challenges faced during admission?

Table 1: Response to question 3

Figure 5 illustrates that the change in the admission policy, lack of job opportunities and preferences for admissions in core branches were the major challenges that institutes faced during admission.

Q.4 What could be the probable reasons for less admission?

Table 2 illustrates that the major reason for fewer admissions as recognized by the various institutes is the lack of interest in engineering by prospective students. An Institute's location and the fee structure of private institutes is also a deterrent to taking up engineering

Table 2: Response to question 4

a) Change in admission policy	26	37.7%
b) Admission in core branches	20	29%
c) Lack of job opportunities	33	47.8%
d) Invisibility of institute brand	6	8.7%

Q.5 What are the initiatives under taken to attract more students?

Table 3: Response to question 5

a) Building college brand	30	44.8%
b) Training and placement activities	51	76.1%
c) Enhancement in industry institute interaction	37	55.2%
d) Outreach programmes	16	23.9%

Table 3 illustrates that more than 75% of the institutes believe that Training and Placement activities can attract students because the main requirement of the students is employment upon completion of the course.

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It also demonstrates that more than 50 % of the institutes believe that enhancement in industry-institute interaction will attract students as this interaction will help to recognize the gaps between industry and institutes and help the institute to ensure that their students are industry ready.

It also shows that more than 40 % of the institutes realize that there is a need to build their brand value to attract students to their institute. Only 23% of the institutes recognize the need for an outreach program to attract students.

The above survey illustrates that the education system parameters existing in the country is the major constraint for decreasing admissions in engineering and therefore in order to be sustainable, institutions should look for opportunities to bring improvements in the education system through innovative means as covered under the scope for improvement.

III. Survey III

To understand the acceptance of the suggested solution for sustainability of engineering education. A survey was conducted. 877 students and 99 teachers participated in the survey and shared their views about the suggested parameters which affect the admissions.

Following five questions were asked:

1. Do you think while taking admission for students the brand name of the college matters?
2. Do you think private colleges can also build good name if they have highly advanced laboratory and honest and sincere faculty?
3. Do you think Integration of school education with higher and technical education will motivate more students to take-up engineering as their carrier?

4. Do you think developing feeling of satisfaction in present engineering students about Engineering program through curriculum and services will help to spread a good word about the engineering and technology and motivate their friends and siblings to take engineering as their carrier?
5. Do you think building a system which goes out of the way to help needy students builds its good name in the society and attract more students?

Total 976 teachers and students responded to the survey.

Table 4: Response to survey 3

Q. No	Students		Teachers		Students & Teachers	
	Yes%	No %	Yes%	No %	Yes%	No%
1	84	16	94	6	85	15
2	96	4	100	0	96	4
3	85	15	88	12	85	15
4	85	15	91	9	85	15
5	93	7	93	7	93	7

The table shows that more than 85% students and teachers agree with the suggested solutions to enhance the interest of students to take up engineering as their career. The literature survey conducted to understand strategies adopted by foreign universities to promote engineering and technology show that they are using the suggested solutions for the same.

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