

Revitalizing Engineering and Technology Education in Maharashtra: Strategies for Restoring Balance in the Ecosystem

B.K. Mishra¹, Rohitkumar G. Singh², Krishnakant G. Mishra³, Bhumika Malhotra⁴, Ritika Tiwari⁵

Thakur College of Engineering & Technology, Mumbai, India

¹ drbkmishra181@gmail.com, ² rohitkumar.singh@tcetmumbai.in, ³ krishnakant.mishra@tcetmumbai.in

⁴ Bhumika.malhotra@tcetmumbai.in, ⁵ ritika.tiwari@tcetmumbai.in

Abstract—Despite the fact that India has made significant progress in engineering and technical education over the last two decades, maintaining student admission and enrollment intact, particularly in engineering programs, is a desirable goal for many institutions and universities. The purpose of this paper is to discuss the issue of declining admissions to engineering/technology branches in Maharashtra, as well as the need to make core engineering courses more appealing to prospective students. current trends in engineering admissions vis-à-vis intake admission vacancy, uncertainty of opening and shutting down of colleges, and irregularity in opting courses. To address this issue, it suggests a number of corrective and preventive measures, including improving core engineering courses, working with industries to assist students in attaining employment, encouraging and promoting research in fundamental engineering fields, offering internships and financial aid, and educating the general public and students about the importance of core engineering courses. By adopting the required measures to make basic engineering areas appealing to students, the study emphasizes how important it is to preserve the dynamic ecosystem of engineering and technology education.

Keywords—Admission, Core Engineering Branches, Disproportion, Corrective Measures, Preventive Measures.

I. INTRODUCTION

Education in engineering and technology is an essential component of any society that is successful. It encourages critical thinking and problem-solving skills, which are necessary for a society to function properly, in addition to producing innovators and entrepreneurs who can assist in the creation of jobs and drive economic growth. However, the ecosystem of engineering and technology education is at risk of becoming unbalanced as a result of more students are interested in computer and related courses and also due increased intake in engineering colleges in Maharashtra and decreasing trends of takers for these admission seats particularly in core engineering branches like civil, mechanical, electrical, chemical and production engineering. The recent trend includes a situation is that fewer students are choosing to study traditional core engineering subjects

because there are more appealing career opportunities in computer engineering and related fields. (Vivekananda International foundation, 2019) An illustration of the shifting trend in the field of engineering and technology education is the issue of declining admissions to core engineering branches in Maharashtra. More students are choosing to take courses in computer engineering and related fields due to increased opportunities, leaving open seats in core engineering fields. Because it affects the entire ecosystem of engineering and technology education, this is a major concern. As a result, there is a void in the engineering and technology landscape that must be filled by qualified professionals in these fields. We must ensure that the engineering and technology education ecosystem remains robust and vibrant. To accomplish this, we must increase the attractiveness of core engineering subjects to prospective students. This can be accomplished by emphasizing the opportunities for personal growth and development that these subjects can provide in addition to the significance of fundamental engineering skills in the job market. Additionally, universities and colleges can offer better teaching tools and more innovative curricula to help students acquire the knowledge and skills they need to succeed in their chosen fields. In addition, it is essential to take the necessary steps to ensure that students are made aware about the institute key differentiator's, course profile and the career opportunities in core engineering branches in order to address this issue. They should be made aware with scholarships and internships to attract more students to these courses. Universities and colleges should also form partnerships with industry and academia to develop more core engineering courses that are relevant to the industry. This will guarantee that students will have the chance to gain experience and skills relevant to the industry, which could help them in their future careers. To make core engineering courses more interesting and engaging, universities and colleges should also look into developing innovative pedagogy and teaching methods. In conclusion, in order to maintain the vibrant ecosystem of engineering and technology education, it is essential to take the necessary steps to make core engineering branches appealing to students.

II. CURRENT TRENDS

Every year, a new trend in India's education system arises. There was a period not long ago when core engineering courses were the most popular among students. Those days, however, are long gone, and a transition has occurred in which an increasing number of students are eager to explore sectors that highlight their skills, talents, and interests. Despite this, engineering as a course has not lost its luster over the years, and a huge number of students continue to enroll as a result of emerging technology branches. Many universities and colleges are increasingly using new and improved teaching methods, such as modern learning labs and technology-enhanced curricula. According to data from the Common Entrance Test, Maharashtra has seen a massive increase in engineering admissions this year, with 1,09,422 students enrolling in various branches (CET). Despite the fact that the admissions process began late last year, many students pursued alternative degree programs. Amidst this threat, the picture looks different this year, with admissions at their highest level in six years. (Tilak, J. B. G., & Choudhury, P. K. (2021)).

A. Status of admission and vacancy in Maharashtra Engineering education in Maharashtra once again saw a high this year with 1,09,422 aspirants enrolling into various branches, this year 1,28,124 seats were available in 329 colleges across the state under the central admission process in the institutes offering engineering and technology courses and 1,33,076 students applied for the same. As compared to the last academic year (2021-22), 21,046 more students sought admissions this year. The trend of students opting for engineering admissions has decreased over the past few years. During the academic year 2016-17, around 79,435 students were admitted to engineering courses. Two years ago, in the academic year 2020-21, only 68,451 students sought admissions. (Hindustan Times) Engineering degrees seem to be back in high demand as Maharashtra has witnessed a considerable jump in the number of confirmed admissions this year. With a total of 1,09,422 candidates confirming admissions, engineering admissions have crossed the one-lakh mark after over six years. As per the data shared by the cell, there were a total of 1,28,124 seats. This is a big jump compared to last year's 88,376 confirmed admissions, when the total capacity was 1,39,484 seats. This is because of reduced intake and significant increase in admissions, the number of vacant seats has dropped considerably. This year, only 18,702 engineering college seats are open, compared to 51,108 last years. While there are several minor factors contributing to this massive increase in admissions, one major factor is new courses launched on emerging technologies. As per the data the highest number of admissions is in Computer engineering. Considering higher intake capacity in these older branches of engineering, which are aligned with computers; they seem to have the highest admissions in sheer numbers. This new emerging branches are almost full, with much lower intake. For Artificial intelligence and machine learning, the total intake was 2,712, of which admissions are confirmed for 2,598 seats. For data science, the total intake was 1,476 out of which admissions are confirmed for 1,411 seats. Out of 192 seats for cyber security, 189 are

filled. (Fig.1.1 and 1.2) indicate the overall analysis of intake admission and vacancy from 2009-2022)

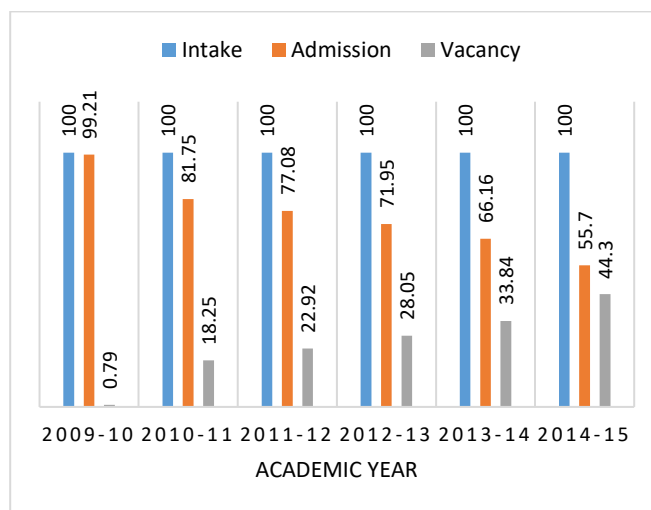


Fig.1.1. Analysis of Intake, Admission, Vacancy from A.Y. 2009-2015

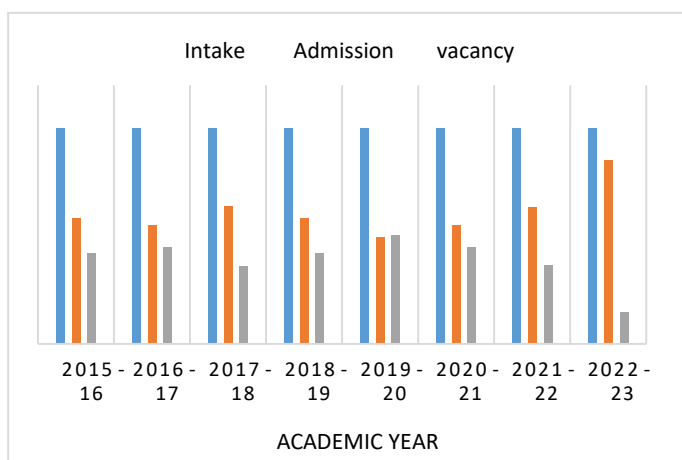


Fig 1.2. Analysis of Intake, Admission and Vacancy from A.Y. 2015-2022

B. Unstable trend of engineering colleges

India has become the hub for Information Technology (IT) & IT enabled services industry and colleges have become training centers for the service-based industry with short-term economic development goals. In spite of this many colleges are not able to sustain resulting in shutting down of colleges drastically. The data also suggests that the number of seats available has also gone down sharply. While the total number of seats available in 2016-17 were 29.99 lakh, the number has dropped to 23.61 lakh in 2021-2022. (Fig.2) denotes the number of starting and closure of engineering colleges at an alarming rate) At the root of the problem is low-quality engineering colleges over the years. As students from such colleges fail to get suitable jobs, they face a decline in enrollment. Many of the colleges fail to provide quality education. Unstructured curriculum and poor delivery of content results in loss of creative thinking and high order

thinking skills. In addition to that statutory bodies wish that institutions must provide courses at UG level which are holistic, interdisciplinary and multidisciplinary which will enable them for multiple career options as per their interest and potential. Potential students and their parents before deciding the course and college look for college brand, college infrastructure, facilities, laboratories, experienced faculties and professional placement records and when these requirements are not met, it results in fall and closure of many engineering colleges. Another significant factor influencing the admissions process is erroneous and outdated curriculum. Most of the Engineering colleges function like the manufacturing industry. Their courses are delivered to structured syllabus with specific text books and laboratories exercises. This in-turn cause loss of creative thinking and experimentation. Curriculum should be made agile and flexible where revision should be based on proper study, research, interaction and discussion keeping the stakeholders in mind, which lacks in many colleges. Lastly, the methods of evaluation are about the volume of information known in a particular subject rather than the depth of understanding a student has in a particular subject, leading to less practical knowledge which in turn affects their campus and professional placements at large.

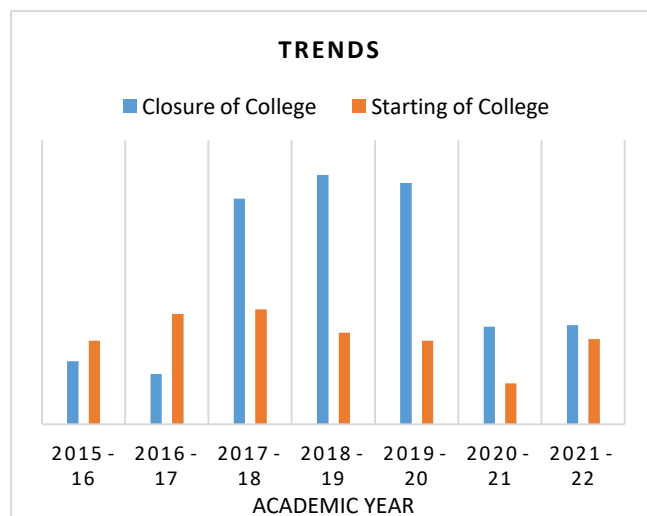


Fig. 2. Year wise analysis of opening and closure of Engineering College.

C. Inclination for computer allied courses and core engineering courses

Education in engineering and technology is an essential component of any society that is successful. It encourages critical thinking and problem-solving skills, which are necessary for a society to function properly, in addition to producing innovators and entrepreneurs who can assist in the creation of jobs and drive economic growth. However, the current situation is that fewer students are choosing to study traditional core engineering subjects because there are more appealing career opportunities in computer engineering and related fields. An illustration of the shifting trend in the field of engineering and technology education is the issue of declining admissions to core engineering branches in Maharashtra.

(Fig.3) indicates the irregular percentage of students opting for Computer versus Core Engineering Branches). A survey was conducted just before the admissions of Academic Year 2022-23, during the outreach programs where approximately 5000 students had participated and this is their feedback regarding their choice of courses. Clearly, more students are choosing to take courses in computer engineering and related fields due to increased opportunities, leaving open seats in core engineering fields. In addition to the popular computer science course, emerging branches of engineering such as Artificial Intelligence (AI), Machine Learning (ML) and Data Science have attracted more students, whereas traditional courses like Civil engineering (CE) and Mechanical Engineering (ME) saw more than 50% of seats go vacant this year. (Engineering education in India: Short- and medium-term perspectives. [Report of the Committee chaired by B. V. Mohan Reddy], 2018). All India Council for Technical Education. As a result, there is a void in the engineering and technology landscape that must be filled by qualified professionals in these fields. We must ensure that the engineering and technology education ecosystem remains robust and vibrant. To accomplish this, we must increase the attractiveness of core engineering subjects to prospective students. This can be accomplished by emphasizing the opportunities for personal growth and development that these subjects can provide in addition to the significance of fundamental engineering skills in the job market. To make core engineering courses more interesting and engaging, universities and colleges should also look into developing innovative pedagogy and teaching methods. In conclusion, in order to maintain the vibrant ecosystem of engineering and technology education, it is essential to take the necessary steps to make core engineering branches appealing to students.

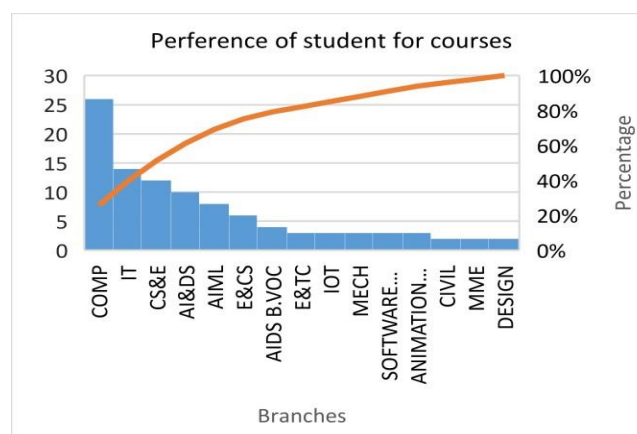


Fig. 3. Interest of students for opting courses

III. PROBLEM STATEMENT

Based on the study of current trends in section 2 of this paper we have identified a problem statement which needs immediate attention of engineering fraternity in order to maintain a vibrant ecosystem in engineering and technology education.

“Current situation in Maharashtra engineering colleges is that there is an imbalance between the increased intake of engineering students and the lack of takers for core engineering branches, resulting in a shortage of admissions and an overall disruption of the engineering and technology education ecosystem.”

In view of this emerging and intensifying problem, Thakur college of Engineering and Technology (TCET) an Autonomous institute under University of Mumbai has taken some corrective and preventive measures and its impact on engineering education which are provided in coming sections of this paper.

IV. CORRECTIVE MEASURES

There have been concerns that popularity and demand of core engineering branches have been decreasing in the past few years. The AICTE in the past has asked all the affiliated colleges to promote these courses by interacting with industry experts, introducing compulsory internships and providing hands-on experience. Following these guidelines, certain corrective measures have been taken by the institute to provide greater flexibility to students and increase their placement and employment rate.

A. Course Correction

Admission process reform is required at the institute level with rigorous marketing and publicity through various outreach programs throughout the years. This is mainly to create a database of sufficient size to cater the need of filling up all the seats of sanctioned intake. Currently we have two problems with the database. First one is the reducing size and second is the conversion factor to admission. Both of these points are required to be addressed in the next cycle. New cycle of NBA for Electronics and Telecommunication, Information Technology, Computer and Electronics has made us eligible for new branches in emerging technology or computer allied branches to increase the intake in the existing emerging technology courses. For the effort towards course correction, the colleges can think of starting computer engineering and design. For instance, after autonomy, we began with Cyber Security (CSE) and Internet of Things (IoT). It can also be done by introducing new courses and renaming existing ones. For instance, admission in Electronics Engineering had improved with moderate demand after renaming it to Electronics and Computer Science (E&CS). Since demand in E&TC is seen low in some institutions, it indicates that it needs timely course correction. (Palit, S.K., Mani, N. and Lithgow, B (1997).

To overcome this challenge, one of the divisions of E&TC can be changed to Computer and Communication Engineering. Course of studies are required to be market driven where students can get employment. However, courses of non-computer oriented courses can be explored as pilot project. Moreover, to ensure overall sustainability, these courses are required to make practice and research

oriented in alignment with present industry requirements.

Impact: Today everybody in Engineering is looking for a lucrative career path through computer oriented courses which creates an imbalance while opting streams creating a void in engineering and technology landscape. Increased interest in fundamental engineering subjects is necessary to maintain the strength and vitality of the engineering and technology system. Admission to any E&TC course is greater than 30%. This year the total intake has increased by 120 seats in Information Technology and AI&DS respectively. If projected with performance, results, student's participation, national and international perspective for projects and professional practices, admissions in core technical branches can also be improved. Moreover, these subject's curriculum needs to be supplemented with computer, AI and Data Science knowledge. Timely course correction and augmentation of the courses will help create demand in non-CS courses. Since admission in Mechanical was a major concern, Mechatronics was introduced to keep the prospective admission numbers intact. Another parameter that helped to keep admissions showing a positive impact, is promotion and publicity of multidisciplinary courses, which is a requirement of NEP 2020. Core programs are required to be supplemented with a strong computer curriculum and computer allied courses which will show a positive impact. (Fig.4) indicates the percentage of comparison in overall intake of seats before and post course correction). There was a sudden drop in admission during 2020-21 as students were preferring computer allied branches rather than opting for core branches, and therefore to maintain the balance and vibrant ecosystem, TCET has taken the initiative for course correction and ever since then the graph of intake has seen a positive trend.

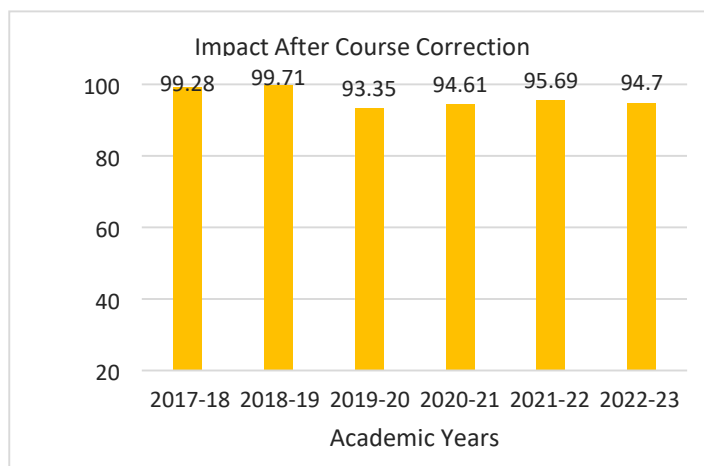


Fig. 4. Indication of increase in admission post course correction in spite of continuous increase in intake.

B. Innovative Curriculum w.r.t Autonomy

“Curriculum holds an outstanding place when seeking to promote innovation in education, as it reflects the vision for education by indicating knowledge, skills, and values to be taught to students. It may express not only what should be taught to students, but also how the students should be taught.” – Kiira Kärkkäinen

Innovation means doing things in new ways, and in curriculum, it means adopting different designs for learning to

help make learning more meaningful for 21st-century learners. Therefore, since autonomy, the institute fosters a culture that nurtures and embodies the values of diversity and inclusivity and innovation that could be reflected in campus life, in curriculum, and in the application of knowledge to real life problems in a global context for the holistic development of technocrats. Therefore, the learning is provided through various teaching schemes like Curriculum Based Learning (CBL), Activity Based Learning (ABL) and various Bridges courses, Technology Based Learning (TBL), Project Based Learning (PBL), Self/Collaborative Based Learning (PBL), and beyond University prescribed curriculum. The resource books are designed and drafted by experienced and dedicated faculties with about 30% change in the curriculum keeping in mind the trends and innovations required in teaching-learning process. The differentiators undertaken at TCET are:

General English Proficiency Training (GEPT): Every semester, GEPT is offered to first-year students alone. Its goals include teaching students how to better comprehend grammar, spot and rectify grammatical problems, cultivate a positive attitude in communication, and prepare them for success in recruitment group discussions and interviews. To comprehend a letter's format and structure, to help the student's writing skills develop, achieving the 7Cs of communication to be a competent communicator, and improving pupils' presentation abilities.

Holistic Student Development (HSD): The institute is launching novel practices for holistic student development in order to support students' professional achievement. The goal is to develop cognitive abilities as well as interpersonal and intrapersonal skills, which calls for seamless learning. This is put into practice through Activity Based Learning (ABL), where numerous activities are undertaken by creating a calendar at the department and institute level to improve research capacity, teamwork, communication, leadership and time management, moral and ethical development, etc.

Employability Skills Development Program (ESD): The training and placement cell arranges "Employability Skills Development" (ESD) training for final-year students with the goals of helping them improve their verbal and non-verbal communication abilities, experiencing corporate needs and how to meet them through teamwork and creative problem-solving, and enhancing their interactions with corporate personnel. It also makes it easier to adapt new techniques and technology.

Specialization (Major, Minor): As a part of the first year of Autonomous, from the year (2019-20) itself, TCET started offering a specialization course to students in acquiring a major / minor degree. The purpose of offering specialization courses was to promote interdisciplinary study and to acquire knowledge in emerging technologies. Every department has offered 2 specializations. Here we will form groups of the departments such that students from any of these groups will take any specialization of department within that group will have major degree and specialization of department belongs to another group will get minor degree. E.g. Group -1 comprises of COMP, IT, ELEX, E&TC, Group-2: Mechanical, Group-3: Civil. Student of Electronics if takes specialization of IT as both the branch are of the same group

student will get major degree and if the student from Civil branch is taking specialization from the COMP department (other group) then he/she will be offered minor degree. However, this practice was only limited at institute level, but now according to the new guidelines by AICTE, to boost admissions in core engineering courses, including civil, mechanical and electronics, (AICTE) will now allow students pursuing these programs to pursue a minor degree in any emerging area at national level. "We want to provide greater flexibility to students by throwing open all minor courses for all engineering disciplines, so that a civil engineering student can minor in information and technology and become job ready," council chairperson TG Sitharam said.

C. Building world class infrastructure

Engineering is still popular among aspiring students. It has been seen that factors like infrastructure, facilities, educational flexibility, educational agility are the first impressions which will attract the students to the campus. Institute accreditation, rating/ranking and industry positioning also plays a great role in attracting the students. Education, training, R&D events, professional/social/students club activities and personality grooming develops the confidence in the learning process and career success through education. Introduction of HSD, PSD, ESD, INTERNSHIP, Activity points, training and placement makes the curriculum to ensure holistic, interdisciplinary and multidisciplinary learning opportunities and also a differentiator parameter for the institute. Examination reform through supplementary examination, innovative examination and evaluation system provides the learning testing in a time bound manner and ensures the timely completion. Apart from this, all the information relevant to admissions need to be regularly updated on the website. College websites should make the data of ranking and rating available as it gives better visibility to the institute and will act as a major pull factor for the aspiring students.

V. PREVENTIVE MEASURES

To avoid the void and gap in engineering education, following preventive measures are undertaken by the institute to keep the ecosystem robust and vibrant. These measures are:

A. Outreach program

Admission process reform is required at the institute level with rigorous marketing and publicity through various outreach programs throughout the years. This is mainly to promote admission in core engineering courses which will help balancing the engineering education ecosystem and promote interdisciplinary learning. The main factors to set the demand in admission to offer market driven courses, world class infrastructure, facility for smart teaching learning process, well qualified and experienced faculty, & campus retention. Outreach programs can help to create the demand for admission against the various odds and help in maintaining the consistent demand. Outreach programs include: Stem Promos, MOCK MHT-CET and Roadmap to Engineering

Education in virtual and orientation program about college and courses in physical mode. Faculty connection with students on various social media platform may improve the outreach which is significantly seen in the past. The different programs conducted for better outreach at TCET are-

AC-STEM: The knowledge-based economy that has characterized the 21st century has given rise to a wide range of interesting employment options for the top paying positions on the market. It is more crucial than ever for our country's kids to be equipped with the knowledge and skills necessary to solve issues in the real world, make sense of information, and be able to acquire and assess evidence for the decision-making process in an ever-changing, more complicated environment. AC-STEM is an effort to show children that education incorporated with a STEM approach is enjoyable as well as dynamic and fruitful in the long run. AC-STEM 2022 was successful in fulfilling its goal by engaging the junior college students of Arts, Commerce and Science in activities that would help them in increasing their STEM aptitude as well as ensuring their holistic development. Events like Picture Perfect (A picture based memory activity containing puzzles to test knowledge and accuracy), Code Overload (An activity based on coding knowledge using C and HTML), Da Vinci Code (Treasure Hunt), ATSTEM (Aptitude Test in Science, Engineering, Technology and Mathematics), STEM Syndicate (Ceremony to felicitate all the winners of AC-STEM 2022 and disclose the names of the participants selected for the final round of ATSTEM 4.0) organized by TCET-ISTE.

Roadmap to Engineering Education: To provide an insight about engineering education and admission process, enlighten participants about various Engineering/Technology courses, provide an insight to aspiring Engineering students with perspective from career opportunities in the field of various Engineering disciplines, to provide an insight about holistic development. This year also TCET conducted a National Level Online event "Roadmap to Engineering Education 2022 (TCET's Way of Nurturing Engineers for better future)"- An outreach activity for guiding students related to the Admission process and career outlook. Students from Science backgrounds, irrespective of their board, and parents, participated in this national-level online event hosted on the Zoom platform and YouTube.

This program is designed to address student's and parent's expectations in general related to: Admission process, Selection of Engineering/Technology courses, Career outlook linked with Engineering and Technology Education. **Orientation Program:** This program is designed to address student's and parent's

expectations in general related to: an insight about the Engineering/Technology Education and Admission Process carried out at Maharashtra state level, To give a description of various Engineering/Technology Courses available at TCET in a brief manner, To deliver an in-depth knowledge about Thakur College of Engineering and Technology, its autonomy and the facilities exposed to its students, To let the participants know about the Infrastructure Facilities available at TCET by

making provision for them to have a College Tour. A session was also organized to make aspiring students aware about campus and professional placement opportunities.

Mock MHT- CET: There are many students who score decent marks in PCM, but they become ineligible for admissions due to non-zero marks in MHT CET. Ultimately, this creates a void and a huge gap in seat vacancy. To fill this gap and increase the rise in admissions, TCET has taken an initiative of conducting Mock MHT-CET. State Level Mock Test MHT-CET is a platform for budding Engineers to crack MHT-CET organized by the Department of Engineering Sciences and Humanities, for 12th Science passed out students. The test is conducted to understand candidates' potential to pursue an Engineering / Technology course, to get hands-on practice for attempting the entrance examination and inspire students for cracking Engineering Entrance Examinations. All the questions were formed from actual CET perspective which gives a hands-on experience to the students to attempt the CET exam. After the MHT- CET online discussion was conducted on zoom platform to discuss the difficulties faced by students. This year around 650 participants out of 971 registrations attempted the State Level Mock Tests MHT-CET 2022. Participants were quite satisfied with the initiative taken by the institute for organizing MHT-CET Mock Tests which gave them an opportunity to practice the test before their final examination. These tests gave them confidence and an overall understanding of the actual questions asked in the exam. Moreover, it also helps students to connect with the college and its courses.

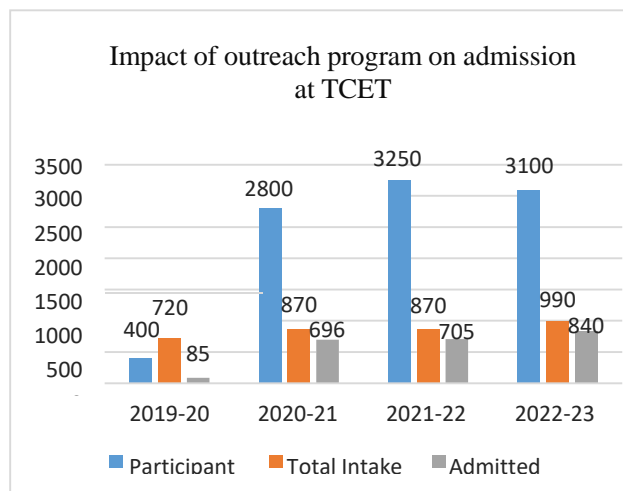


Fig. 5. Impact of outreach program on admission at TCET

VI. STRATEGY TO STRENGTHEN CORE ENGINEERING COURSES

The improvement of core engineering courses ought to be the primary focus of colleges. Courses need to be updated timely and made industry relevant. Colleges should collaborate with the industries/corporate and help students find work placements. This will make engineering courses more appealing to students and assist them in finding employment. Additionally, colleges should encourage and promote research in fundamental engineering fields. This will

contribute to the creation of new job opportunities and enhance the core field's appeal, in order to give students a hands-on experience with the industry, colleges should also offer internships. Students should also receive more financial aid and scholarships from colleges. Another important strategy can be the introduction of dual degree in engineering colleges. By aligning the core engineering branches with computer allied courses, admissions in colleges can be strengthened drastically. Since, AICTE has also added this new guideline for ensuring greater flexibility among students the number of students enrolling in core engineering courses will surely benefit from this. Additionally, colleges ought to concentrate on raising public and student awareness of the significance of core engineering courses and their relevance to the current job market.

VII. SUGGESTIVE STRATEGIES BY TCET

For improving core engineering education, the "Engage, Educate, and Employ" (EEE) model is recommended. The primary goals of this model are to engage students, instruct them in fundamental engineering fields, and then assist them in finding employment. The first step is to engage students in fundamental engineering fields by creating an environment that is both entertaining and instructive. One way to accomplish this is to provide a variety of activities such as field trips, hands-on experiments, guest lectures, and so on. This will pique students' interest in the core engineering fields. The next step is to ensure that students have access to the resources they require to learn the fundamentals of engineering. This can be accomplished by providing students with current course materials, specialized labs, and other resources. Finally, the model focuses on assisting graduates in finding work in the engineering industry. This can be accomplished by providing access to internships, mentorship programs, and job fairs. These resources will enable students to gain work experience and gain employment in the engineering field. Another effective tactic could be that core engineering branches can be made aided by the government. This will help the meritorious students who are financially weak, to pursue admission in these branches which will result in more admission. Through targeted marketing campaigns and promotional efforts, make core engineering courses more visible, establish partnerships with academic institutions and industry in order to create courses that are current and relevant and to provide practical experience in the industry, in order to encourage more students to take core engineering courses, increase scholarships and internships, to make core engineering courses more interesting and engaging, encourage colleges and universities to adopt more innovative teaching pedagogy and methods, set up platforms and forums to bring together students, professionals, and academics to talk about the current job market and the opportunities in the field, to give students the information and direction they need to make educated choices, establish mentorship programs and career guidance initiatives, Inform students about the significance and relevance of core engineering courses to the job market, to create new jobs and opportunities, encourage research and innovation in the core engineering field.

VIII. CONCLUSION

The present study reveals the current emerging trends in engineering admission process and have identified the gap in admissions and vacancy, frequent opening and shutting of colleges and imbalance in opting courses among prospective students. Identifying these gaps, we have come up with a problem statement followed by a case study highlighting various corrective and preventive measures undertaken by TCET to ensure dynamic and vivid teaching learning environment. Also positive impact of these measures were observed in form of positive trends of admission filling in spite of continuous increase in intake. Towards the end, we have emphasized certain crucial and fundamental strategies that need to be adopted by leading engineering and technical institutions to guarantee the flow of nicely-certified engineering graduates in appropriate numbers and meet the present and future challenges of rapid technological changes and industrial development in India.

REFERENCES

- [1] Palit, S.K., Mani, N. and Lithgow, B., "Computer- aided undergraduate electronic study programme". *Proc. Pacific Region Conf. on Electrical Engng. Educ. (PRCEE, 97)*, Wollongong University, NSW, Australia, 163-168 (1997).
- [2] Rajaraman, V., "Undergraduate computer science and engineering curriculum in India". *IEEE Trans. on Educ.*, 36, 1 (1993). <https://dte.maharashtra.gov.in/>
- [3] Sheppard, S. D., Macatangay, K., Colby, A., & Sullivan, W. M. (2009). *Educating engineers: Designing for the future of the field*. Stanford, CA: Jossey-Bass.
- [4] Tilak, J. B. G., & Choudhury, P. K. (2021). *Paradoxes and contradictions in the growth of engineering education in India*. Working Paper 1/2021. New Delhi: Council for Social Development.
- [5] VIF: Vivekananda International Foundation. (2019). *Towards more effective education: Emergence of stem education in India*. VIF Taskforce Report. Vivekananda International Foundation.
- [6] <http://www.aicte.com/policiesprog.html>
- [7] <https://www.hindustantimes.com/india-news/aicte-set-to-ease-norms-to-boost-admissions-in-core-engg-courses-101676139496731.html>
- [8] AICTE. (2015). *Technical education in India: A futuristic scenario* (Report of the AICTE Review Committee, 2015). [Chairperson: M. K. Kaw].
- [9] AICTE. (2018). *Engineering education in India: Short- and medium-term perspectives*. [Report of the Committee chaired by B. V. Mohan Reddy]. All India Council for Technical Education.