

Title of the practice-I

Reduced class strength for improved student learning and employability

Objectives / intended outcomes of this “best practice” and what are the underlying principles or concepts of this practice (in about 100 words)?

Objectives of the Practice

Increased student-teacher interaction

Quicker feedback through better assessment from instructors

Enhanced learning experience for students through improved participation, especially in labs

More opportunities to learn from peers, augmenting collaborative and cooperative learning

More discipline and control over the class leading to increased student engagement

Underlying Principles

Faculty devote more time for thorough assessment of students’ assignments, laboratory and project work and providing feedback.

With increased interaction among classmates, students gain quality learning experience.

More comfortable seating posture, more room to manoeuvre and more personal space, could lead to higher levels of student focus, eventually lead to higher levels of student performance.

What were the contextual features or challenging issues that needed to be addressed in designing and implementing this practice (in about 150 words)?

We at Geethanjali College of Engineering and Technology (GCET) wanted to have a class size of 40 students for improving students’ capabilities. However, this requires higher infrastructure as well as faculty numbers to be increased by 50%. Unfortunately, constraints in the fixation of tuition fee make it financially unviable and therefore infeasible to have such smaller class sizes.

Keeping this in view, as a compromise, in CSE and ECE classes, each having 240 students, we have reduced the class strength to 48 students per section instead of the normal 60 students per section.

This has forced us to increase the number of faculty by 25% increasing expenditure on salaries of these two departments by more than 1.5 crore rupees/year. Over and above, operational expenditure of labs, in terms of consumables, equipment maintenance and repair, and electricity charges has increased. Expenditure on civil infrastructure and class room furniture also increased.

Describe the practice and its uniqueness in the context of India higher education. What were the constraints / limitations, if any, faced?

It's an established fact that students learn faster and perform better in smaller classes. A class size of about 30-40 students results in more individual attention, increased participation, and better communication between instructor and students. Students receive feedback quickly from peers and instructors, encounter more opportunities for hands-on learning than in large classes with 60 and more.

A few of us studied and worked abroad, have experienced that coursework in a class with lesser number of students is adapted to fit the needs of students. As already mentioned, we have kept our class size 48 instead of 60. Most of the colleges and universities in our country have 60 in a class.

Our classes have three-seater benches with six rows and four columns capable of accommodating 72 students. However, we have ensured the middle seat is kept vacant in each bench ensuring students have a more comfortable seating posture needed since students spend nearly 6/7 hours a day. This eliminates noise in classroom since opportunities for students to have cross talk is almost negligible as instructor can easily identify if anyone is talking and would have more control of the class, maintaining discipline and promoting better learning.

Due to reduced strength, instructors get to know students faster, tailor pedagogy catering to learning styles of a good number of students.

Reduced class strength is more conducive, facilitating hands-on assignments, particularly in labs, wherein just two students work at a workbench, instead of usual three, enhancing learning experience considerably.

Smaller classes encourage students, get involved in learning, sharing ideas, thoughts and views with peers and instructors, benefit from a more thorough assessment of their work, receiving feedback.

Students have a better chance to get to know classmates benefiting from their comments on assignments and presentations. Further, each student's contribution is acknowledged, particularly in discussion settings and learns from one another based on the contributions they make during class.

Reduced class size benefits slow learners and disadvantaged students with rural background. Facilitates improvements in student engagement, lower drop-out rates, better non-cognitive skills, promotes persistence and self-esteem among learners.

Greater individualization of instruction, better classroom control and, thus, better learning ambience. Instructors have individual interactions with students, consulting with parents, giving greater attention to students' work. Class size is an important determinant of student outcomes.

Constraints/Limitations:

Class size reduction involves recruitment of more teachers, requires additional infrastructure, operational expenditure and is quite expensive.

Evidence of Success

Provide evidence of success such as performance against targets and benchmarks, review/results. What do these results indicate? Describe in about 200 words.

Ever since 2016-17 academic year, we have kept our class size as 48, our graduate outcomes have improved.

More students have been participating in various co-curricular activities, namely, in Project/ Problem-based learning, paper/ poster presentations, incubation centre activities, Hackathons, programming contests and student club activities.

Students have designed and built several prototypes, developing collaborative and cooperative learning in groups, discussing ideas, exchanging views and thoughts, evolving ways to resolve conflict and reach agreement, becoming aware of feelings of members in a group, listening to ideas of others with open mind and respecting each other's views even if they don't agree with others.

With a smaller class size, students' group sizes are smaller, paving way for increased involvement and participation in group work, led to higher levels of student focus, resulting in higher levels of student performance. Students got more opportunities to interact with instructor obtaining feedback more frequently.

Reduction in class size has facilitated reduced workload on instructors and mentors as they need to assess lesser number of students' work, mentor lesser number of students resulting in instructor spending quality time with them ensuring better and improved learning experience for students resulting in enhanced graduate outcomes and employability.

Problems Encountered and Resources Required

Please identify the problems encountered and resources required to implement the practice (in about 150 words).

We have tried to implement smaller class sizes in CE, EEE, ME and did so for one academic year. Unfortunately, number of admissions in CE, EEE and ME has been a bit low in first year. However, lateral entry students join in second year filling the vacant seats of first year.

When dividing sections in second year, distribution of students in order of merit into third section needed students grouped earlier to be divided further. Parents and students complained as students by then have developed friendship with some and were reluctant to move to other section. Hence, we had to discontinue this in above disciplines.

More civil infrastructure in terms of class rooms, faculty cabins/cubicles and furniture is required, so also, more quality faculty, especially senior instructors for second year and third year classes of increased sections due to reduction of class strength. Obviously, more financial resources are needed. Unfortunately, salary of additional faculty is not considered while fixing tuition fee.

Title of the practice-II

Mentoring - supporting students' professional and personal development

Objectives

- To identify mentee's strengths, weaknesses, thereby empowering mentee overcome weaknesses, enhancing strengths, and encouraging professional and personal development.
- To give mentee an overview of engineering profession, gain a deeper understanding of engineering by relating it to daily life, explore possible career paths and opportunities, encourage student build required skills, self-confidence through accomplishments, work towards reaching his/her aspirations and become a strong professional.

Underlying Principle:

Mentor ensures mentee develops trust in their relationship, listens with empathy, respects uniqueness of mentee, influences through constructive feedback and empowers mentee to make right decisions towards reaching mentee's professional and personal goals.

What were the contextual features or challenging issues that needed to be addressed in designing and implementing this practice (in about 150 words)?

Each mentor adopts 15-20 students, monitors student's learning, identifies quick and slow learners. Initiates remedial measures for learners falling below desired standards, brings them up, ensuring student's aspirations of securing degree with well-paid job. Quick learners are motivated explaining opportunities that galore, provide guidance, focusing on career planning based on mentee's identified goals.

Periodic reviews are conducted for students experiencing academic difficulties, identifying gaps in their understanding and knowledge, reviewing pre-requisite skills, informally

discussing non-academic matters also, building an atmosphere of trust, allowing student to self-assess his/her strengths and weaknesses and providing advice.

Challenges are, faculty with mentoring capabilities are less although they are trained on conduct of mentoring, which is overcome to some extent through a departmental structure to mentor faculty. In spite of this, a good number of students often are reluctant to discuss about their difficulties. Further, due to mushrooming of engineering colleges, students' motivation is low.

Describe the practice and its uniqueness in the context of India higher education. What were the constraints / limitations, if any, faced?

Our mentoring system offers advice on an individual basis on academic and career development issues. Created a mentoring action plan reflecting different professional development needs at various stages of the student's college study.

A two week "Orientation Program" facilitates student in adjusting/adapting to the college environment.

Further, we discuss importance of the following with mentees:

Attending all classes, doing homework/assignments, regular study of three hours/day, participation in class activities such as tutorials, learning in groups, etc. and their implication to do well in examinations and also in career.

Laboratory exercises, mini and major projects, how they reinforce theoretical concepts, necessity of acquiring programming and logical thinking skills, required for securing a good job, citing the trend of enormous increase in costs of education and health care the student may have to provide, for his/her family's future needs.

Fast-changing technological developments, job profiles/roles, skills needed, diminishing opportunities for unskilled personnel, and availability of abundant opportunities only for skilled and talented professionals.

Problem solving, inquisitiveness, self-learning ability, Self-supervision, Punctuality, prioritizing work, Written and Oral Communication, Pro-activeness, team-work and Leadership Skills.

Participation in Project exhibitions, Programming/coding contests, Internships, Literary competitions, Technical Seminar/Poster Presentations, and Entrepreneurship activities, which help build student's professional career.

Importance of “Life Long Learning”, advising them to cultivate the habit of wide reading, covering diverse areas from English literature to anthropology, etc. to succeed as a professional.

Offer career guidance programs, provide assistance and resources on individual basis, help formulate career plans, providing exposure to infinite possibilities likely to arise in future, enable students acquire skills, abilities and confidence to transit successfully to further studies/work/self-employment.

Constraints:

Some faculty do not possess adequate mentoring capabilities; many of them have graduated from colleges with low reputation and their peer group’s quality is found wanting, resulting in their low articulation skills, thus their inability to attract students towards mentoring.

Our up-bringing of children is such they don’t openly discuss issues concerning to them either with parents or with mentors. In addition, a good number of students hailing from rural background, feel shy and have apprehensions discussing issues.

Evidence of Success

Provide evidence of success such as performance against targets and benchmarks, review/results. What do these results indicate? Describe in about 200 words.

Mentoring resulted in improved attendance, class participation, and performance in examinations. Mentees’ mathematical ability, problem solving, self-learning, articulation abilities and punctuality in fulfilling tasks with pro-activeness also improved.

Mentoring system implemented in the college has been resulting in improved graduation rates within the stipulated duration of four years, lower drop outs, improved student participation in various activities, namely, project exhibitions, Hackathons, programming/coding contests, creative writing competitions, technical seminar/poster presentation competitions, winning prizes in events organized at many national/international fora. The number of students undergoing internships and project works in industries has improved significantly. Group/collaborative learning activities have improved leading to the development of some working prototype models with a couple of them getting filed as patents, and are proposed for conversion into products. The number of placements offers and number of students opting for higher education in India and abroad has a significant rise over the last few years. More students are involving in professional society activities and are also undergoing Business English certificate course resulting in improvements in scores of IELTS and GRE. A good

improvement has been observed in the students getting themselves acquainted with the latest technological developments indicating a substantial change in their attitudes.