

## **Teaching-Learning:**

ACE adopts student centric methods to make the Teaching Learning process more effective. In this process **Experiential learning, participative learning and problem solving methodologies**. The teacher's role is that of a facilitator who promotes self management of knowledge, holistic development and skill formation through participatory learning activities such as following lecture method in combination with other teaching methods. The extent of the lecture method varies from course to course. However there has been a paradigm shift in teaching from purely chalk and talk methods to adopting a judicious mix of lecture method and modern methods of pedagogy.

### **Experiential learning:**

- Learning that is considered "experiential" contains all the following elements: reflection, critical analysis and synthesis, opportunities for students to take initiative, make decisions and be accountable for the results. It provides opportunities for students to engage intellectually, creatively, emotionally, socially, or physically.
- It is any learning that supports students in applying their knowledge and conceptual understanding to real-world problems or authentic situations where the instructor directs and facilitates learning. The crux of the learning occurs during the reflective process where students assess their decisions in the light of natural consequences, mistakes, and successes.
- What matters most is whether the activities allow students to chase answers to questions, make decisions, take risks, think on their feet, and justify their answers. These types of activities enhance student learning.
- These immersive experiences will help students develop and build upon knowledge, skills, and values associated with thinking like an expert within your field.
- Decide what you want your students to be able to do in the course to make sure the experience you are planning aligns with your learning outcomes.
- The experience should answer a question or problem relevant to your course. The learning comes from the rationale for their answers and the reflections from the experience.

- Feel free to start with a single assignment that complements the concepts you are teaching and add more as needed.

### **Participative learning**

- Students are the first and foremost stakeholders of the college. The teaching learning process is student centric by default and sufficient space is provided for that in academic plan. Learner centric teaching methods such as group work, role play, project work, field visit, industrial visits, case study, debates, seminars, presentations are employed to make teaching and learning more effective.
- Educational trips, surveys are organized at departmental levels. All departments organize guest lectures by eminent personalities to develop the students to learn on their own. Visiting faculties drawn from industry and academic institutes of repute supplement the teaching process and provide the information to bridge the gap between industry and academia.
- Institution has a club/ association with every department which organizes number of student centric activities. The participating students are from the same department or from other departments which promotes interdepartmental collaborative activities. These activities are an integral part of the departmental activity.
- These events promote leadership qualities in the students. It also inculcates the spirit of team work among the students. In addition to the collection of audio visual aids in the central library, departmental libraries also have their own collection, to promote easy access. Practical in science departments involve individual as well as group work, under the guidance of the teacher.
- On necessary topics, Interactive lectures with Industry experts are initiated. Collaborative learning: The department maintains departmental libraries and internet facility to access all the journals, e-material, e-books etc., through library server enabling the students and faculty to keep abreast of the latest developments in their respective fields.
- Institute periodically conducts orientation programs / workshops on new pedagogy methods to the faculty. Problem based learning was implemented in the tutorial classes by the faculty. The institute also encourages getting MOU with the industries for better training in core fields and bridging the gap between academics and the industry.

- The students in a class room are divided into groups of six with a topper in each group. These groups are encouraged to promote cooperative learning concept, where they express knowledge within the group and have healthy competition.
- Mini projects and main projects which are part of curriculum are done by students by forming a group. The institute encourages departments to conduct hands on experience workshops like Android applications, Robotics, Arduino and Raspberry Pi etc for students.

### **Independent learning:**

- The institute provides well stocked library which consists of bulk of books, journals, project reports and other teaching materials for the use of students and faculty.
- The department provides well equipped and advanced labs for improving programming skills & logical thinking.
- Faculty and students has got the access to NPTEL video lectures for effective teaching learning practices. Students are also encouraged to use MITS open courseware.
- Students are encouraged to give seminars starting from first year on the basics / fundamentals of subjects.
- The students are encouraged to attend workshops and conferences. Students are encouraged to take up engineering projects in community service.

### **Individualized Activities:**

- Internship/Project Work, Mini-projects, Seminars, Case studies, student presentations, paper Presentations, internet research and etc.

### **Group Activities:**

- Group seminars, Peer teaching, Tutorials, Group discussion, Model making, organizing exhibitions, Intercollegiate and interdepartmental competitions, Interactive guest lectures,
- Brainstorming, Role play, Field survey/ Field work/ Field trips, Debates, Quizzes, College magazine–designing, industrial visits etc.,
- Newspaper based assignments promote social awareness and also give working knowledge of the theoretical concepts learnt. Free access to the internet and DELNET (e-journals) make them self-reliant and independent learners.

## **Innovation and creativity in teaching-learning.**

Creativity and innovation bring about interest and motivation to learners as well as trainees, which eventually lead to learning. Perhaps the simplest way to transform class in a powerful way, active learning strategies get students working with course material in the classroom either individually or in groups. Active learning strategies, unlike open class discussion, are timed, structured, and designed to give students a chance to learn by acting on a specific piece of content in a specific way.

Students learn material better when they engage it actively rather than absorb it passively.

Decide on a set of goals for an activity? What you want students to learn or be able to do at the end? And structure the activity to reach those goals.

The institute Introduced e-learning platforms are provided to facilitate independent learning wherein students can access course contents online. Thus e-learning platforms bridge the gap from classroom learning, and also supplement advanced learning. Available e-learning platforms include ERP, learning resources through CDs and DVDs.

Teaching –learning is a phenomenon where the teacher and the student are learning. In our institution, we have been following this method. By this method, the teacher is refining his/her subject knowledge and effective teaching skills, where as the student finds it easier to understand the subject and its application. Our teaching faculty's endeavor is to follow this method meticulously so that both the participants get benefit and value addition to their efforts. It is not a traditional knowledge transfer from the teacher to the student.

Traditional teaching has been replaced with more innovative and creative ways of disseminating, sharing and facilitating knowledge development in students. As both are involved with commitment, through this method, an interest has been created in the student and the teacher has to encourage the student to come out with new and innovative ideas. This method also motivates both the teacher and the learner.

A teacher has to find out innovative ways and new methods, and our faculty has been using various methods by using teaching aid to encourage the student's involvement. In this endeavor, our faculty has been taking pains with interest to demonstrate live / practical/ day-to-day examples, sometimes taking some live examples from the students to discuss a topic,

coupled with technology. Both the faculty and student are involved in model making, and discuss in depth. This teaching-learning innovative method would certainly encourage the students to raise questions and some times, with working models development, they get answers to their queries. This kind of support would certainly enhance their innovative skills and creative ideas.

The following are the technologies and facilities used by the faculty for effective teaching:

- All departments are well equipped with ICT-enabled facilities for teaching-like computers with internet facility
- OHPs, LCD projectors in all class rooms
- E-Library resources and online content are used by teachers where the courses need updated information.
- Videoconferencing facility
- Workshops and Seminars are held by the college and the faculties are also encouraged to attend seminars and conferences.
- Faculties use e-learning resources like NPTEL Videos/pdf and open e-learning resources
- The college faculties are well facilitated in the extensive use of technology for effective teaching.