1.Use of various instructional methods and pedagogical initiatives:

In order to improve the quality of Teaching and Learning process,the following instructional methods and pedagogical initiatives are followed by the faculty in content delivery.

- Chalk and Talk
- Infromation and Communication Tools(ICT)(,Presentation ,Videos,E-learning resources)
- Demonstration(Physical models /Laboratory)
- Assignments&Tutorials
- NPTEL Lectures & Guest Lectures
- Google Classrooms
- Seminars by students
- Course files
- Industrial visits and Internships
- Department Fests
- Different Learning approaches like independent Learning, Interactive Learning and Collaborative Learning(Group Discussion, Brainstoming sessions and Seminars).

Chalk and Talk: The faculty use chalk and audio-visual aids in teaching,Students are also encouraged to interact during the lecture hour by getting the doubts clarified on the spot.

ICT Tools:For better understanding of the concepts,faculty members use ICT members use ICT enabled teaching methods such as Presentations,Animated videos are extensively used to improve the teaching –learning process.

NPTEL Lectures & Guest Lectures: The students are encouraged to register for NPTEL courses and to follow NPTEL lectures. Hence ,the students enhance their knowledge by expert lectures through NPTEL videos ,workshops which improve the knowledge of students through interactive learning practices. In each class ,a considerable number of students are certified by NPTEL.

Google classroom:Google introduced a new online application called Google classroom,a technology in the classroom app designed to provide a single dashboard to unify instructors use of other Google apps.It is a free online learning platform,Google classrrom offers several benefits for students and teachers.Google classroom via Google Chrome or from any mobile device regardless of platforms.All files uploaded by teachers and students are stored in a classroom folder on Google Drive.Users can access Classroom anytime anywhere..Students no longer must vary about crashed computers or hungry dogs.

Google classrrom's purpose is to facilitate paerless communication between teachers and students and streamline educational workflow.Classroom allow teachers to create classes,post assignments,organize folders, and view work in real –time.Students will have an Exposure to an Online Learning platform.Google classroom can help students become and stay engaged in the learning process.

Course Files:Course file prepared by the faculty plays a vital role in Teaching- Learning Process.For each course file is prepared by the concerned faculty.The structure of the course file consists of following items.

Table 1.Structure of Course File

S.No	Content
1	Program Outcomes(PO's) and Program Specific Outcomes(PSO's)
2	Syllabus copy
3	Course Outcomes(CO's)
4	Mapping of PO's and PSO's with CO's
5	Academic Calendar
6	Course Time Table
7	Lesson Plan
8	Lecture Notes
9	Question Bank(10 marks and 2 marks)
10	Presentation slides and other any ICT,if any
11	Question Papers of internal examination tests,University question papers and Assignments
12	Two sample answer scripts of IET's and Assignments
13	Key and Scheme of evaluation of IET's
14	Internal Exam marks
15	Record of Attendance(Attendance registers)
16	Assessment of Course Outcomes

Lesson Plan:Lesson plans with clear course outcomes for each course are prepared by the faculty as per the scheme prescribed by the University.Lesson Plan with course outcomes are prepared by the subject-handling faculty before the commencement of the semester and is duty approved by the HOD.According to the lesson plan,work done has been inculcated in the academic file to ensure HOD to monitor the coverage of syllabus.

Question Bank:Question Banks are prepared for each course based on the Course Outcomes and considering the nature of the University question papers.The previous question papers of

University are also maintained in the course files.Assignments questions list is also included in the course file.

Department Fests:In an Academic year,for each semester the department will organize Engineer's day,AMPLE by the department technical association MEA.Through tis program,the department will organize various technical and non-technical events.The students are encouraged to organize and participate actively in the events.Hence the students will acquire Technical and Non-Technical skills.

Learning Process:The faculty members are encouraged for making the students to involve actively in the process of learning.Following learning approaches are followed by the faculty to dvelop various learning skills among the students.

Independent Learining:The Central Library has a vast collection of books,journals & project reports,etc..A Library hour is made compulsory for all the students to encourage the students to learn independently.Internet facility is available to the stdents to learn on their own.

Interactive Learning:Every classroom is equipped with LCD Projectir and interne connectivity.Faculty regularly uses presentations and videos as teaching tools and encourages interactive learning among the students.Organize guests lectures and seminars regularly.Collaborative Learning: Faculty facilitate discussion an important concepts within the classroom to encourage combined learning.Departmentatl association are highly active in the institution.These association regularly organize seminars,discussions and competitions to encourage collaborative learning among the students.

Innovations by the Faculty in Teaching and Learning

The term "Innovation" in teaching and learning is intrinsically quite broad in perspective and there are a number of views on how to defie it.In the department of Computer Science and Engineering of SVCE-Tirupati,we define it as follows

"Any teaching strategy, approach, technique, or tool can qualify to be termed as an innovation if it is used in a new way, to produce quantifiable gain for student outcomes or the student experience, and can be implemented widely".

Many of such innovative initiatives taken by faculty and staff of the department can be observed in the Course Files, Laboratory Manuals and other documents that are maintained in the department.

Statement of goals form innovations in teaching and learning:

- Enrich the learning experience of students through innovative tools and techniques.
- Enhance the understanding and knowledge of students with innovative tools and techniques.
- Broaden the perspective of students in matters relating to academic, contemporary as well as social issues using innovative tools and techniques.
- Motivate the students to think, formulate and act innovatively.

Innovative Methods of Learning:

Innovative learning methods are initiated and implemented by the faculty for students to learn in a better manner.

- Computer-assisted learning
- Lab Improvement for Future Trends (LIFT)
- Learn Emerging Advances in Domain Experimentation
- Group Learning
- Innovations in Assessment
- Innovations in Evaluation
- Providing More opportunities for practical learning
- Facilitate internships

Process for identifying and publishing innovative initiatives:

The department continuously strives to achieve the goals set towards maintaining the continuity of innovative practices in teaching and learning Methods. Innovation is literally done by each dedicated faculty, knowingly or unknowingly; literally every single working day of his/her career. Some initiatives may be so small to escape attention, and might be difficult to quantify and record; but may affect the learning of students in a subtle but important way. On the other hand, some initiatives might be so impactful so as to be clearly visible as making huge strides in improving the teaching-learning process. Given below is a listing of some of the noticeable initiatives taken by the faculty of the department. However, it should not be construed as a conclusive list; but as a part of an open-ended process of continuous improvement.

1. **Department Space submissions**: Faculty of the department regularly upload a lot of academically relevant documents on the Department Space repository of SVCE. The portal is directly accessible from the institutional website svce.edu.in. The submissions include power point presentations, articles, lecture notes, lab manuals and many other useful documents that are beneficial for the students.

2. **Club activities**: There are KAITES Association that are currently being run by the Department of Information Technology, various club activities in these club's act as excellent grounds for innovative learning. In these clubs, the faculty are not the only disseminators of knowledge; senior students (older club members) pass on their knowledge and learning to the younger generation (new club entrants) via a continuous ritual-like process, which includes hands-on training, presentations, lectures, group discussions and many other innovative procedures. These clubs with their club activities literally act as the most fertile grounds for innovations in the teaching-learning process.

3. **Virtual labs**: In certain labs, for instance the vibration engineering lab, some relevant experiments are conducted online on web browsers with the help of simulators. Such online facilities are called as virtual labs (http://www.vlab.co.in/), and are a part of an excellent innovative initiative taken by the MHRD of India.

4. **MOOCS:** MOOCS or Massive open online courses are a relatively new entry in the academic sector throughout the world. Although the role of MOOCs in effective dissemination of knowledge is still under debate, they are speedily gaining unquestioned acceptance in more and more academic circles as an innovative means of imparting

additional knowledge to students. Here at SVCE, we support augmenting our own efforts of effective delivery by MOOCs available through agencies like NPTEL and SWAYAM.

5. **Miniature scale models**: In many relevant subjects, faculty encourage the students to make miniature working models of mechanisms. Thus, enhancing interest and level of learning.

6. **E-mail correspondence with students**: Faculty frequently engages in e-mail correspondence with the students to share notes, remarks, assignments and test results. This significantly boosts the out-of-class **learning experience of students.**

7. **Student** presentations: In many relevant subjects, students deliver presentations to the rest of their classmates. This significantly boosts students' confidence and their learning experience.

8. **Audio-visual learning**: In many subjects (wherever necessary) audio-visual aids are used. It is a proved fact that audio-visual presentations in the classrooms are more effective in capturing the attention of students.
9. **Classroom quiz sessions**: These help in creating interest by breaking monotony of regular classes while enhancing the learning experience.

10. **Adherence to Bloom's taxonomy**: The mid-term tests for all subjects in the department are made in strict adherence to the Bloom's taxonomy. This ensures that the learning as well as the assessment mechanism is based on standard practices of the academic fraternity worldwide.

11. **Library assignments**: Students are set such assignments from time to time; wherein they are required to research certain topics from the resources available in the institute library and finally submit a report.

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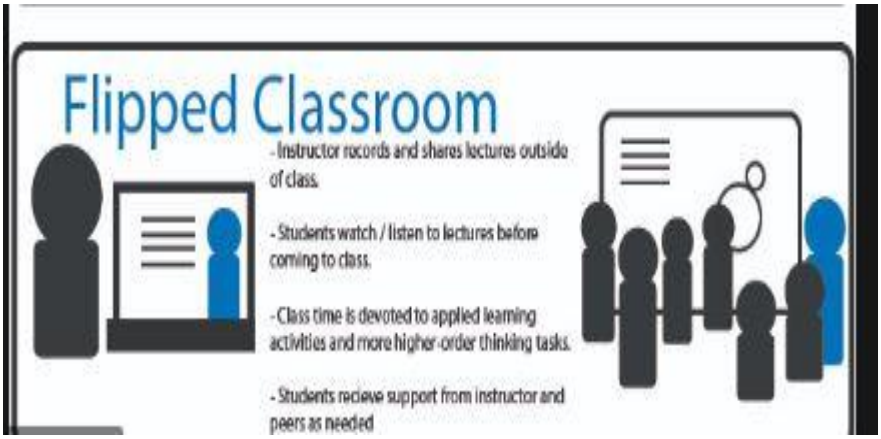
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

FLIPPED CLASSROOM

Flipped Classroom is one of the most innovative methods of teaching that has evolved in the recent times.Gradually revoltionizing its age-old counter part,Flipped classroom is nothing but a blened strategy of teachning and learning.Its aim at enhancing the overall student engagement,thereby yielding more rewarding outcomes.

Flipped classroom is a systematic approach in teaching where in traditional classroom-based learning is inverted.This approach helps students in getting introduced to the study material beforehand.

As the students would have already learnt about the subject ,the actual classroom time can be used to explore the subject.Teachers can utilize classroom time to depeen subject understanding by way of group discussion and problem solving activities.



Flipped classroom is nothing but an inverted version of traditional learning.Students are made to acquire as much knowledge within a specified classroom context,followed by analyzing and evaluating the subject after the class.

Students are given specific instructions on the subject before the classroom time.As a result,the actual time can be used for practicing and application of concepts and ideas through interaction with peers and faculty.

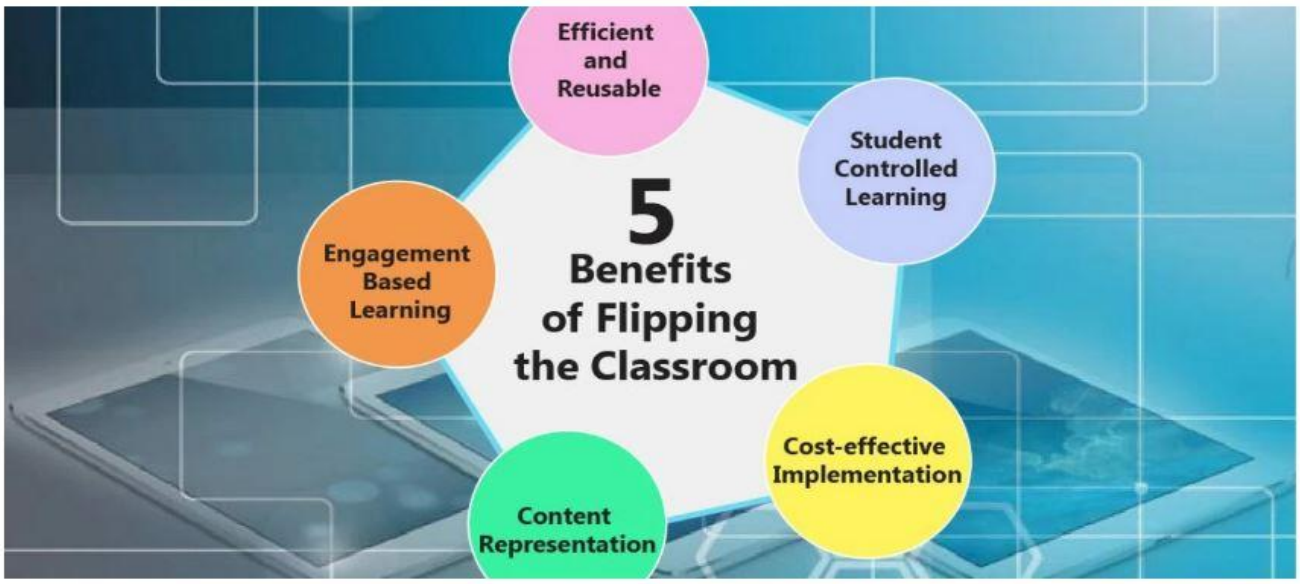
Hence the class is over,students look back on their classroom time and work upon the feedback they have garnered for an enhanced experience.

Benefits for students:

- Lesser frustration with homework as students watch/listen to lectures at home and then solve problems.
- When students have problems understanding a new concept,they can ge it cleared immediately through targeted answers.
- Enough classroom to explore new concepts/subjects through collaboration and peer discussion
- Become faster and easier for students to catch up with peer group on lectures missed out on

Benefits for Teachers:

- As students are already well-versed with the subject,the teacher has little or no need to explain them each and everything.
- When a lecture is done,it can be reused several times as and when it's needed.
- More freedom for teachers to decide how much time to be spent on students for each topic
- Better transparency for parents as well as enhanced two-way communication between parents and teachers.

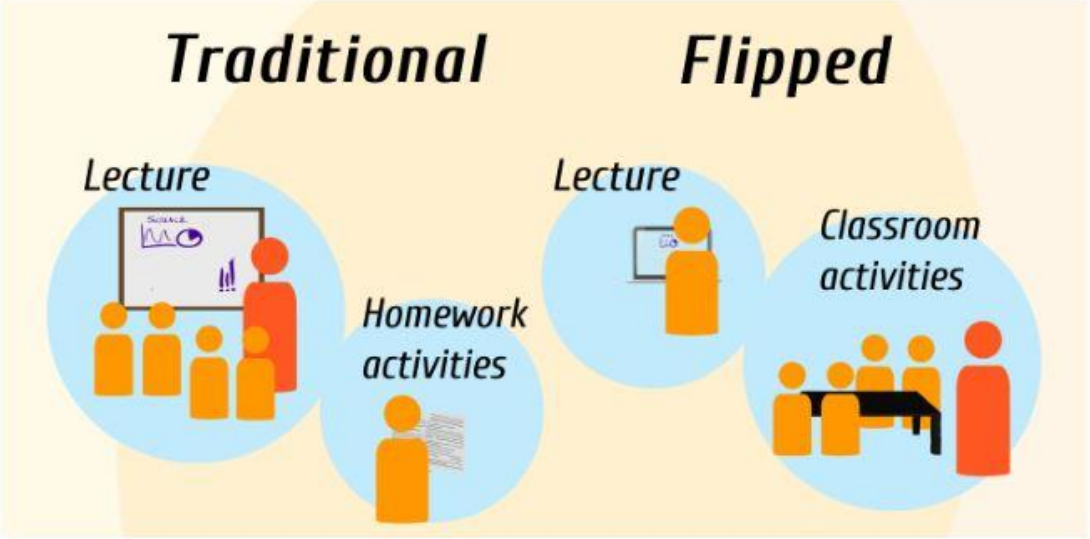


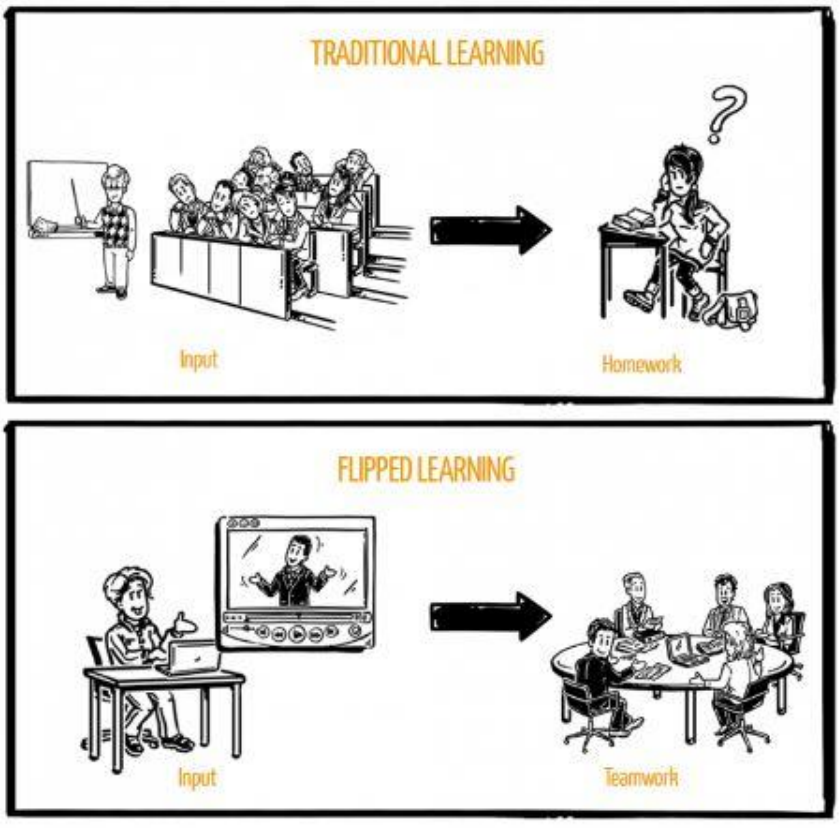
ADVANTAGES:

- Opportunities for teachers to teach (through video) and then clarify (the next day in person);
- Improved student access to content, potential for family support, emphasis on student self-direction, ongoing access to content for all students (review, student absences, etc.)

DISADVANTAGES:

- Significant 'front end' work by the teacher;
- Need for technology and bandwidth for all students;
- Increased screen time;
- Not engaging for all students;
- Not all 'homes' are equally supportive for students


Traditional
Flipped
Lecture
Homework activities
Lecture
Classroom activities


TRADITIONAL LEARNING
Input
Homework
FLIPPED LEARNING
Input
Teamwork