Internal Quality Assurance Cell

Innovative Teaching – Learning Practices

Contents

Innovative Teaching – Learning Practices

Innovative Teaching – Learning Practices

Title: 50:10 Module

Objectives:

1. To inculcate the critical thinking skill among the students so that they can summarize the
2. knowledge gained through class teaching or self-learning.
3. To promote self-learning on advanced topics.
4. To improve verbal communication and presentation skill of student.
5. To boost the confidence of student to face the audience.

The context:

The students in the institute come from vernacular backgrounds and many of them have average or poor communication skills. The institute has implemented 50:10 module to improve the communication and presentation skills of students.

In engineering faculty, the lecture period is of 60 minutes. In 50:10 module, the teacher conducts lecture for the duration of 50 minutes and 10 minutes slot is reserved for presentation. This activity has helped to boost the confidence of students. The focus of 50:10 module is to share the perception of knowledge about the concept in front of the class.

The practice:

- At the end of every lecture, randomly a student is selected as presenter who will summarize the concepts taught by the teacher or the knowledge gained through self-learning.
- Teacher observes the content delivery and command over language of the student that includes analysis of vocabulary, grammar, and communication skills.
- Teacher provides feedback regarding the areas of improvement.
- Teacher maintains the record of the topic presented by each student.

Evidence of success (outcomes):

1. Improved performance during practical, oral, seminar and project examinations which results into better score.
2. Students' confidence is remarkable during placements, technical and non-technical events.
3. Increased participation and achievements in co and extra-curricular activities.

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Photograph(s): 50:10 Module

Student explaining technical content using board in classroom

Student summarizing the lecture contents

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Title: Peer learning

Objectives:

1. To develop responsible and autonomous learners through collaborative learning.
2. To increase confidence of the learners.
3. To enhance the social, technical, and group learning skills.
4. To facilitate exchanging of the knowledge and experience with each other.
5. To help students learn difficult concepts in less time.
6. To inculcate communication and team building skills.

The Context:

Peer learning is a joyful collaborative learning practice in which students interact with other students to attain educational goals. In its broadest sense, peer-to-peer learning is a mode of "learning for everyone, by everyone". It takes place in a formal or informal learning context. It is conducted in small groups which help students learn effectively.

In this peer learning, one of the peers is a senior student or has special expertise is called mentor. The learners are small group of junior students, called mentees. Peer learning manifests aspects of self-organization that are mostly absent from pedagogical models of teaching and learning. Peer learning involves discussion among the peers related to the sharing of subject knowledge, solving subject difficulties, how to write university paper, how to work on projects, books to be referred, preparation for placements, preparation for higher studies, benefits of participation in co-curricular and extra-curricular activities etc.

In peer learning, students are more comfortable to discuss their all types of issues with their peers. It helps to create healthy relation between them. It also helps mentors to enhance their leadership qualities, self-confidence, time management, communication and team work skills.

The practice:

- One faculty member is appointed as faculty coordinator of peer learning activity at institute level as well as at department level.
- The faculty coordinator of each department makes a group of 5 students.
- Senior student is assigned as a mentor for each group as per his/her academic performance/skills.

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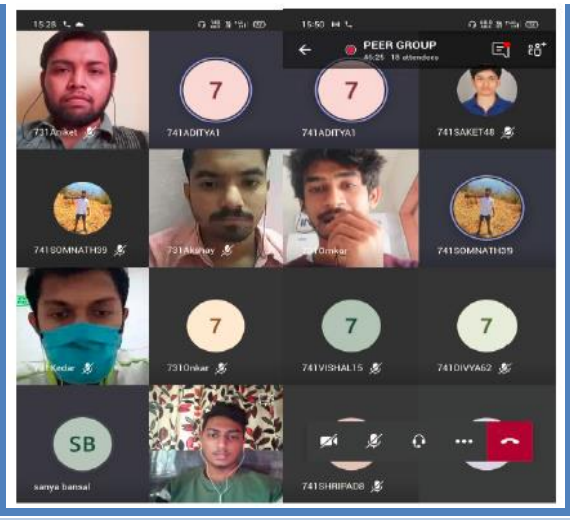
- The peers meet on regular basis for discussion on various topics.
- Mentor conducts meeting with the group for discussion on various topics as and when required.
- The report of the meeting is prepared and submitted to the faculty coordinator.

Evidence of success (outcomes):

1. Improvement in placements.
2. Improvement in academic performance.
3. Increased participation and achievements in individual and group activities.

Photograph(s):

Mentoring by Mr. Pranav Dalvi, TE to SE students 28.08.2019. Discussion held on Logic Development for the subject, Programming Language



One on One Interaction, and Doubt Solving Time Management During Exam conducted on 11/11/2020. Mentor Mr. Suyog Patil

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Title: Cross word puzzle

Objectives:

1. To create active learning opportunity.
2. To develop problem solving and critical thinking skills
3. To improve time management skills.
4. To help learners recall the information in joyful way.
5. To increase the general/technical vocabulary.

The Context:

Cross word puzzle is a concept designed to educate through joyful active learning. Crossword puzzle increases the interest of students to learn the concept at the same time boosts their problem solving and critical thinking skills. It also helps to improve their time management skills.

The practice:

- Teacher assign the crossword puzzle to students.
- Students solve the puzzle in group/individually.
- The puzzle is solved either on paper or on laptop/mobile.
- The solution is discussed by the teacher.

Evidence of success (outcomes):

1. Improved clarity of concepts
2. Improves academic performances
3. Improved critical thinking

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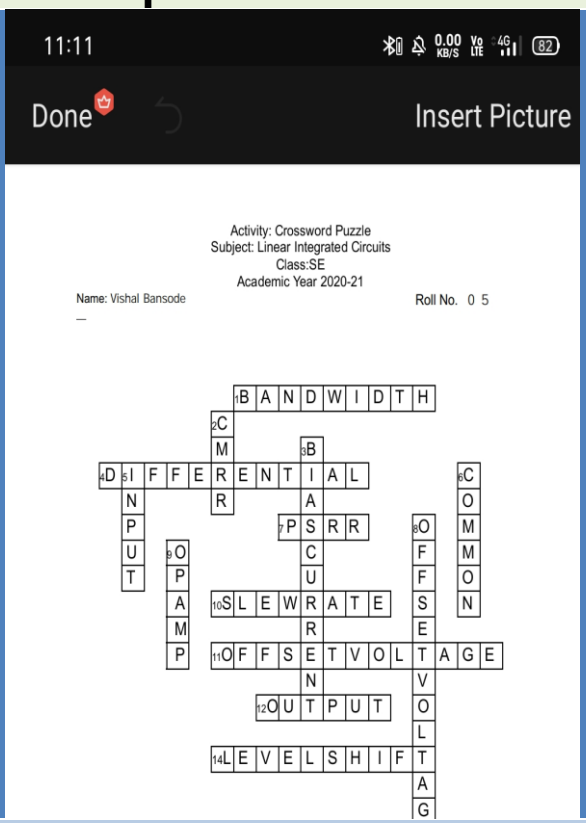
Photograph(s): Crossword puzzle



Crossword puzzle of subject Linear integrated Circuits (Second Year - Instrumentation)

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Title: Virtual Lab

Objectives:

1. To provide remote-access to labs for experiential learning.
2. To facilitate sharing of basic as well as state of the art equipment and resources of remote labs.
3. To facilitate students to learn basic and advanced concepts through remote experimentation.
4. To provide an online platform to perform experiments with self-pace.

The Context:

Virtual lab facility is provided to overcome the limitations of physical distances and to give exposure to state of the art equipment and resources. Virtual laboratory is able to enhance students' problem solving, critical thinking, creativity, conceptual knowledge, science process skills, lab skills, motivation, interest, perception, and learning outcomes.

The practice:

- The institute is nodal center of IIT Bombay virtual lab.
- Teachers prepare the schedule of experiments to be conducted.
- Students create the login.
- Select the lab. relevant to subject.
- Study the procedure for experimentation.
- Virtually perform the experimentation.
- Submit the results and feedback.

Evidence of success (outcomes):

1. Enhanced conceptual knowledge.
2. Improved performance in practical/oral examination.
3. Enhanced problem solving and critical thinking skills.
4. Improvement on quality of projects.

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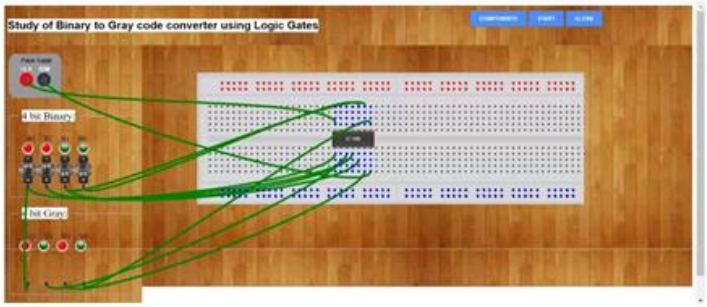
Photograph(s): Virtual Lab.

Name of Experiment: To Study of Binary to Gray code converter by using basic and universal gates.
Name of Discipline: Electronics and Communication (IIT Bombay VLabs Dev)
Name of Lab: Digital Electronics
Experiment Link: http://vlabs.iitb.ac.in/vlabs-dev/vlab_bootcamp/bootcamp/cool_developers/labs/exp2/index.html

Circuit diagram (If applicable):



Student's photograph:

Student performing experiment
Of subject - Digital Electronics on Virtual lab

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Title: Knock it to Know it

Objectives:

1. To inspire students to disassemble the system.
2. To explore and learn hardware circuits and components.
3. To understand testing and trouble- shooting methods.
4. To enhance observational and analytical skills.

The Context:

System investigation is a standard hand on practice of dismantling the system/model for learning the technology. It covers dismantling the system, studying and reassembling. The study includes opening the system and analyzing it at its component level and studying the size & shape, functioning of various components used in the system.

After the analysis, students will be able to identify faulty components and arrange for repair, replacement or adjustment in accordance with procedures and manufacturer's requirements. Also they have to select replacement and/or repaired parts for reassembly in accordance with specifications and procedures of its installation and construction. It also includes the safe use of hand and power tools and interpretation of drawings/diagrams. Finding the appropriate solution boosts the confidence of students in decision making under critical condition. This practice may help students to come up with new ideas in similar lines as a team or as an individual.

The practice:

- The system to be dismantled is identified by the faculty members as per the discipline.
- Every component of system is thoroughly studied.
- Student prepares a report of system investigation.
- Teacher supervises the activity and discusses the report.

Evidence of success (outcomes):

1. Students are able to build/test/repair the laboratory kits and equipment.
2. Significant participation of students in technical events.
3. Improvement in oral/practical examination performance.
4. Improvement in placements.

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Title: Conceptual videos

Objectives:

1. To reinforce essential content that has been previously introduced.
2. To give comprehensive review of the important concepts.
3. To help students focus on their learning.
4. To facilitate students with self-paced learning.
5. To facilitate students to quickly recapitulate the concepts.

The Context:

Conceptual videos facilitate learning of the students who have missed their regular classes and to help them to explore and digest the concepts at their own pace. These videos are helpful to teachers for conducting flipped and blended classes. Learning from the endless parade of slideshows and long articles made it a bit difficult to digest a large amount of information in one go. The attention span of the students has been reduced to max. 15 min. This mode of teaching is appreciated by the millennials who are tech savvy.

The practice:

- Every teacher prepares videos with quality content based on concepts in the course.
- The videos are uploaded on the institute's official YouTube channel.
- Teachers play videos from other sources such as NPTEL, MOOC, YouTube etc.
- Teachers conduct interactions/discussions of the students based on the contents of the videos played during the session.
- YouTube video links are provided to the students through Learning Management System, institute website and social media platforms.
- Teachers give assignment/test/quiz based on the video contents.
- Teachers maintain report of the same.

Evidence of success (outcomes):

1. Improved self- learning.
2. Quick and effective grasping of concepts.
3. Improved academic performance.
4. Increased enrollment of students in online courses.

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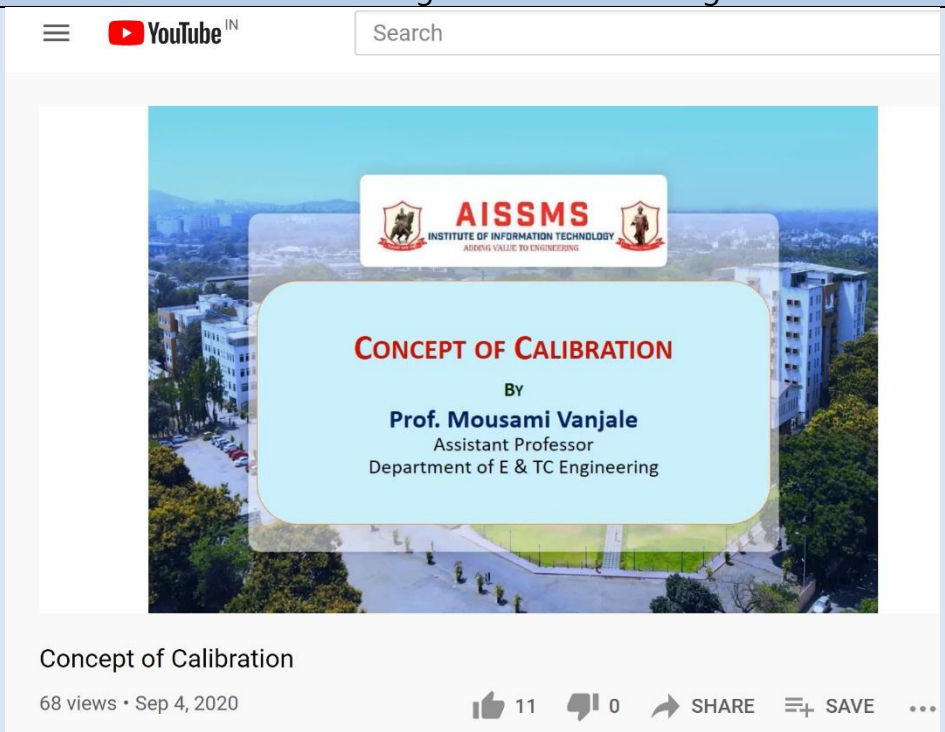
Photograph(s): Conceptual Videos

Students watching NPTEL video during the lecture



YouTube video on Concept of Calibration

Innovative Teaching – Learning Practices

Title: Learning Management System(LMS)

Objectives:

1. To share the learning resources of all the courses at a single place
2. To give the privilege of accessing content anytime and anywhere
3. To make learning effective
4. To create online test/quiz/assignments
5. To monitor and communicate students' progress online.
6. To encourage communication between student and teacher in forums and discussions.
7. To ease process of evaluation and feedback

The Context:

To overcome the limitations of the conventional classroom teaching, LMS can be invaluable for the education sector as it enables sharing of the learning resources of all the courses at a single place and gives the privilege of accessing content anytime and anywhere.

The practice:

- Every teacher uses a LMS in the form of Moodle/Google classroom/MS Teams/institute ERP.
- Teacher creates a class/team on LMS platform and invites/adds the students to join the same.
- Teacher shares learning material/resources to the class.
- Teacher schedules and conducts theory/practical sessions, meetings, webinars, tests etc.
- Teachers evaluates the tests and grades the students.
- Teacher gives project/activity/case study/survey based assignments to students.
- Students complete and submit/upload the assignment.
- Teacher evaluates the assignment and return feedback and scores to students.

Evidence of success (outcomes):

1. Improvement in academic performance of students.
2. Efficient resource and time management for teachers.

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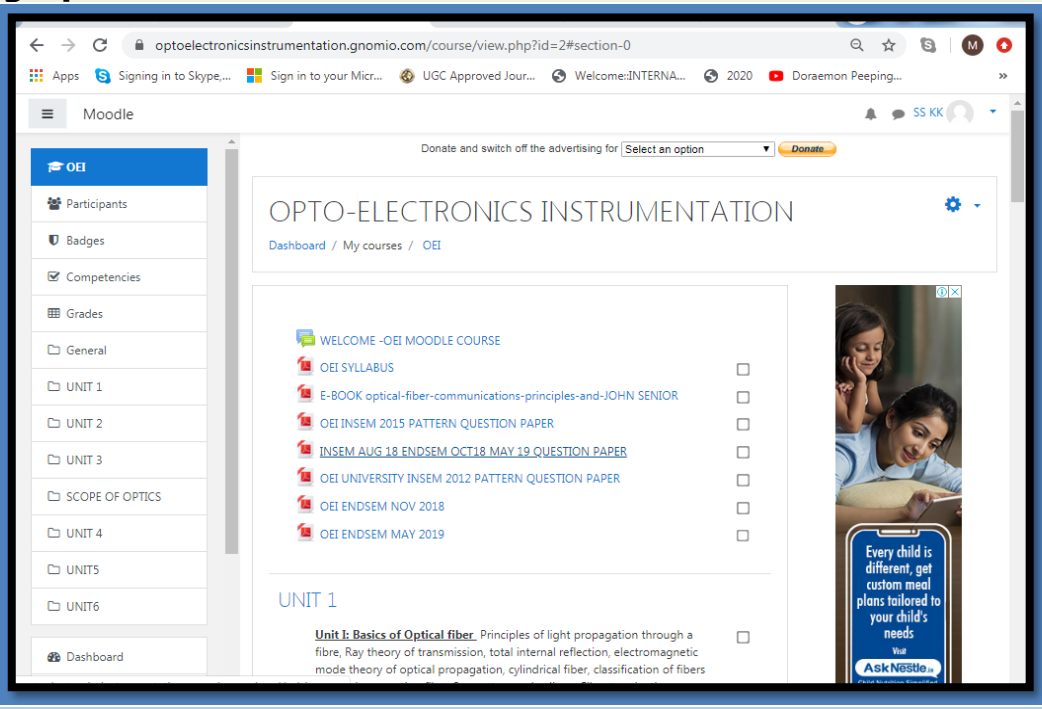
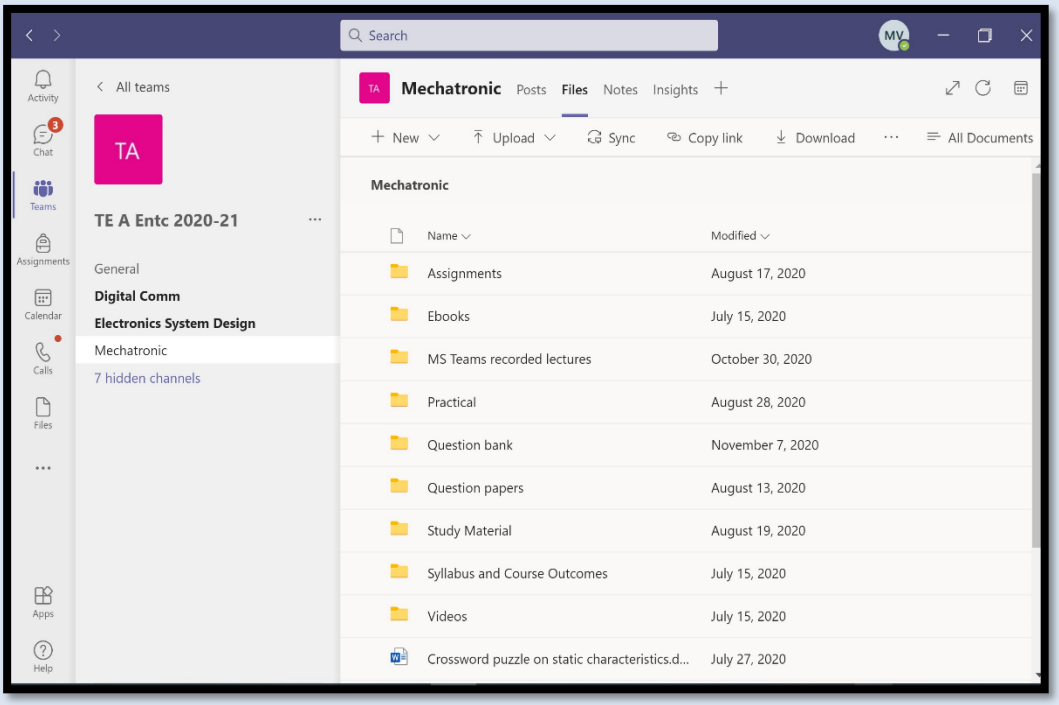
Photograph(s): LMS



MOODLE created for subject "Instrumental Methods for Chemical Analysis"



Channel on MS teams for subject "Mechatronics"

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Title: Project Based Learning

Objectives:

1. To integrate knowledge and hands on skills through mini/major projects.
2. To facilitate self-learning and critical thinking
3. To build collaborative work practices
4. To improve the employability and entrepreneurship skills.
5. To improve oral and written communicate skills.
6. To help students gain confidence for facing challenges in professional world.

The Context:

Project-based learning is a collaborative learning approach designed to give students the opportunity to develop success skills such as critical thinking, problem solving, communication, collaboration and creativity/innovation.

The practice:

- A group of a maximum of three students is formed having common interest.
- The group has to search a project topic of their interest or the teacher allots the topic to the group.
- The group prepares a literature survey on the selected topic.
- The group interacts with the teacher/domain experts for related topic.
- The group prepares the working model/prototype of the project.
- The group submits the project report.
- The group participates in project exhibitions/competitions.

Evidence of success (outcomes):

1. Increased participation in project competitions and paper publications.
2. Increased awards in project competitions and paper publications.
3. Patent applications by some student groups.
4. Increased number of placements and startups.
5. Improved academic performance.

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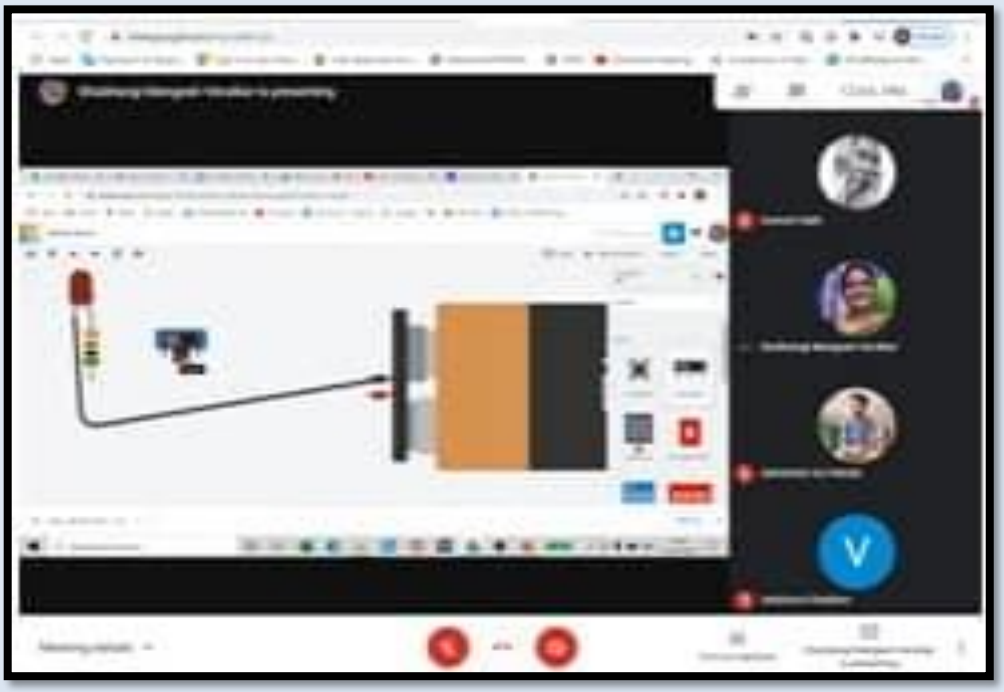
Photograph(s): Project Based Learning

Online workshop on Project Based Learning



Virtual Hands on experience on Tinkercad platform

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Title: Industrial visit

Objectives:

1. To bridge the gap between industry and academia.
2. To provide an exposure to practical implementation of theoretical concepts.
3. To create awareness about industrial work environment.
4. To provide an opportunity to interact with industry experts and know about career prospects.
5. To help students to identify the problems faced by industry and provide the solution through academic projects.
6. To create awareness about safety precaution measures in industries.
7. To expose students with state-of-the-art technologies and facilities.
8. To inculcate professional ethics.

The Context:

The curriculum of the affiliating university does not satisfy the needs and requirements of the current trends in the industry. Institute organizes industrial visits to bridge the gap between industry and academia. Industrial visits provide the students an opportunity for experiential learning.

The practice:

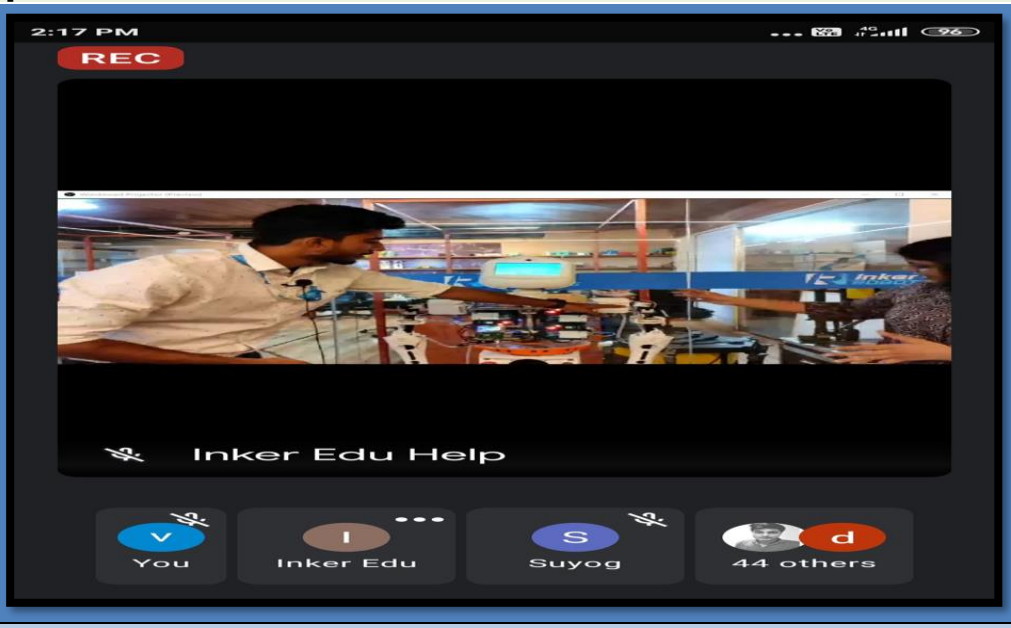
- Teachers identify the industry/company/organization as the gap analysis and plans the visit before the commencement of every semester.
- Teachers completes the formalities to conduct the industrial visit.
- Before the visit, teachers brief the students about the objectives and outcome of the industrial visit.
- During the visit, the students interact and clarify their doubts with industry experts.
- Students prepare and submit a report of their learning experiences during the visit.
- Teachers collect and analyze the feedback from students as well as the expert.
- Teachers prepare the visit report.

Evidence of success (outcomes):

1. Improved practical knowledge
2. Improved academic performance
3. Increase in number of industry sponsored projects.

4. Increase in number of industrial internships/trainings.
5. Increase in number of lectures/workshops/trainings conducted by industry experts.
6. Increase in number of placements.

Photograph(s): Industrial Visit



Virtual visit to Inker Robotics, Bangalore on 25/02/2021

Industrial Visit to "Pune Techtrol Pvt. Ltd., MIDC Bhosari, Pune" on 10/09/2019

Title: Expert lectures

Objectives:

1. To bridge the gap between industry and academia.
2. To promote and encourage interaction between industry experts and students.
3. To share real life experience and recent trends in industry with students.
4. To enhance industrial visit, training and sponsored project opportunities for students.
5. To make students aware about the career prospects and relevant employability skills.

The Context:

Industry experts can influence students to think, investigate, apply newfound knowledge, and follow a path of lifelong learning. Experts come from various disciplines and with different areas of expertise, and so students get introduced to potential careers and jobs they can opt for. Students get an idea about, how to face the interviews. It can also contribute to the teacher's knowledge and practices.

The practice:

- The teachers identify the topic on which the expert session is to be organized.
- According to the topic teachers identify the expert from relevant industry.
- Teachers completes the formalities to conduct the expert lecture.
- During lecture, students interact with the industry expert to understand the insights and prospects of the topic.
- Teachers collect and analyze the feedback from students as well as the expert.
- Teachers prepare the event report.

Evidence of success (outcomes):

1. Improved academic performance.
2. Increased number of placements.
3. Increased opportunity to work on industrial problems.

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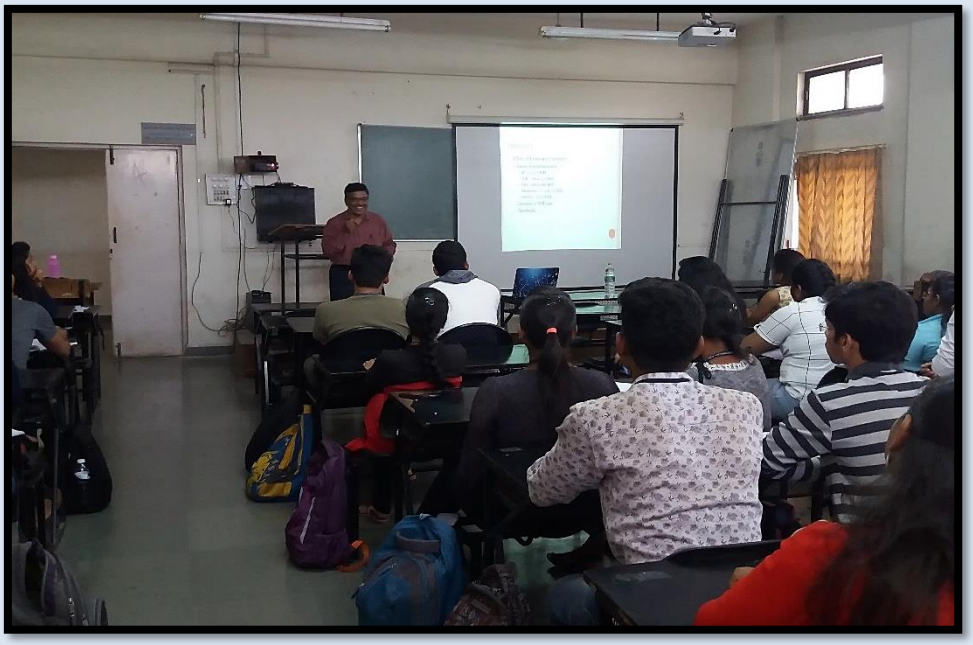
Photograph(s): Expert lectures

Expert lecture by Mr. S. N. Rishi, Scientist E, ETDC Pune on "Fundamentals of measurement and calibration" for the subject Basic Instrumentation on SE class



Expert lecture by Mr. Vivekanand Joshi, Asst. PSI, Maharashtra State Police Wireless Department, Pune, on "Practical uses of source and channel coding in digital radios" under the subject - Information Theory, Coding and Communication Networks for TE (E&TC)

Innovative Teaching – Learning Practices

Title: Open Course Ware (OCW) assignment:

Objectives:

1. To inculcate self-learning approach.
2. To create awareness about the open course ware resources available.
3. To improve the listening, reading and writing skills.
4. To increase the employability skills.

The Context:

As the affiliating university curricula lacks the contents on the latest technology and trends the institute has implemented Open Course Ware (OCW) assignment to expose students to the contents beyond curricula.

The practice:

- Teachers assign the topics to students and provide the information regarding available OCW modules.
- Students refer OCW videos/resources.
- Students write and submit the brief summary of the contents in the prescribed format as an assignment.
- Students also opt and submit the assignments for MOOCs offered by NPTEL/Spoken tutorials/Coursera etc.

Evidence of success (outcomes):

1. Improvement in academic performance.
2. Improvement in number of placements.

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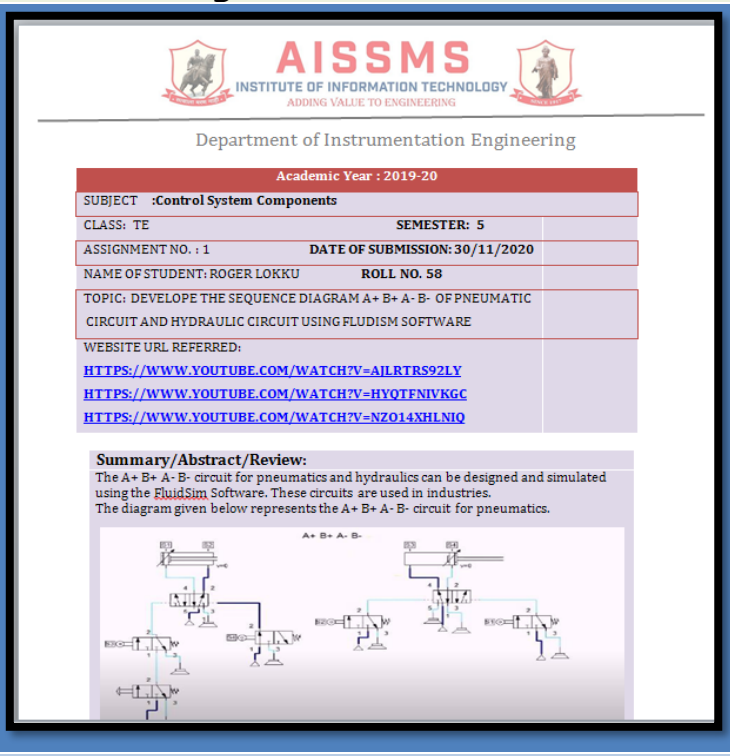
Photograph(s): OCW Assignment



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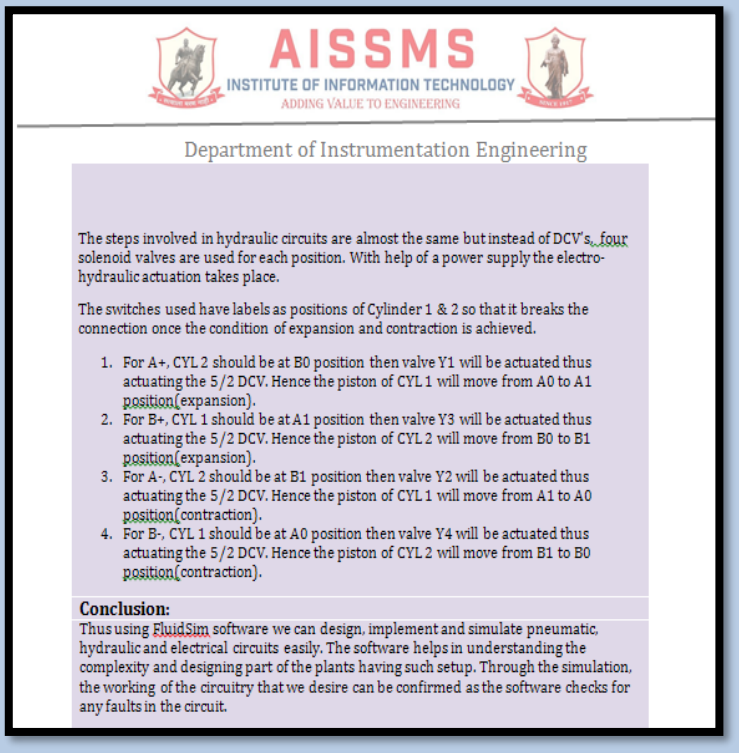
ADDING VALUE TO ENGINEERING

Department of Instrumentation Engineering

Academic Year : 2019-20	
SUBJECT :Control System Components	
CLASS: TE	SEMESTER: 5
ASSIGNMENT NO. : 1	DATE OF SUBMISSION: 30/11/2020
NAME OF STUDENT: ROGER LOKKU	ROLL NO. 58
TOPIC: DEVELOPE THE SEQUENCE DIAGRAM A+ B+ A- B- OF PNEUMATIC CIRCUIT AND HYDRAULIC CIRCUIT USING FLUDISM SOFTWARE	
WEBSITE URL REFERRED: HTTPS://WWW.YOUTUBE.COM/WATCH?V=AJLRTRS92LY HTTPS://WWW.YOUTUBE.COM/WATCH?V=HYQTFNIVKGC HTTPS://WWW.YOUTUBE.COM/WATCH?V=NZO14XHLNIQ	

Summary/Abstract/Review:
The A+ B+ A- B- circuit for pneumatics and hydraulics can be designed and simulated using the FluidSim Software. These circuits are used in industries.
The diagram given below represents the A+ B+ A- B- circuit for pneumatics.



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Department of Instrumentation Engineering

The steps involved in hydraulic circuits are almost the same but instead of DCV's, four solenoid valves are used for each position. With help of a power supply the electro-hydraulic actuation takes place.

The switches used have labels as positions of Cylinder 1 & 2 so that it breaks the connection once the condition of expansion and contraction is achieved.

1. For A+, CYL 2 should be at B0 position then valve Y1 will be actuated thus actuating the 5/2 DCV. Hence the piston of CYL 1 will move from A0 to A1 position(expansion).
2. For B+, CYL 1 should be at A1 position then valve Y3 will be actuated thus actuating the 5/2 DCV. Hence the piston of CYL 2 will move from B0 to B1 position(expansion).
3. For A-, CYL 2 should be at B1 position then valve Y2 will be actuated thus actuating the 5/2 DCV. Hence the piston of CYL 1 will move from A1 to A0 position(contraction).
4. For B-, CYL 1 should be at A0 position then valve Y4 will be actuated thus actuating the 5/2 DCV. Hence the piston of CYL 2 will move from B1 to B0 position(contraction).

Conclusion:
Thus using FluidSim software we can design, implement and simulate pneumatic, hydraulic and electrical circuits easily. The software helps in understanding the complexity and designing part of the plants having such setup. Through the simulation, the working of the circuitry that we desire can be confirmed as the software checks for any faults in the circuit.

Sample OCW Assignment

Innovative Teaching – Learning Practices

Title: Quiz

Objectives:

1. To provide joyful learning experience.
2. To assess the learnt concepts.
3. To provide quick review/recap of the concepts.
4. To improve concentration and time management.
5. To increase confidence.

The Context:

Conventional assessment methods/tools require more preparation time and stressful to the students. To provide joyful learning experience at the same time assess the learning of the students, quiz proves to be an effective informal method of assessment.

The practice:

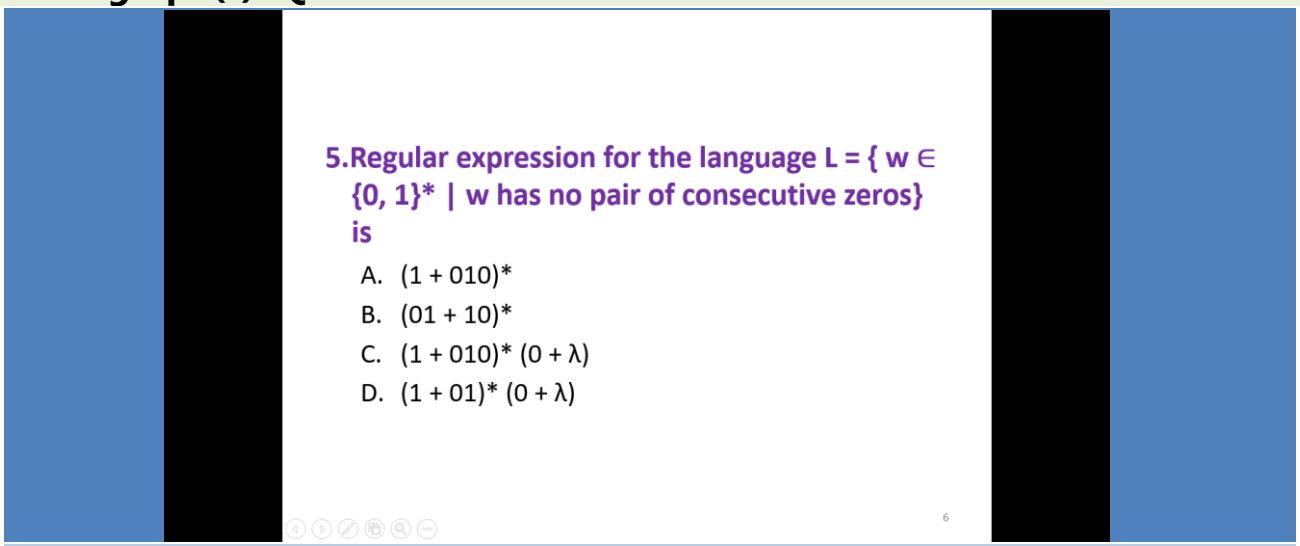
- Teachers prepare a quiz related to a topic.
- Teachers share learning material/resources with the students.
- Students can participate individually or in groups in the quiz.
- Teachers ensure the involvement of all the students in quiz.
- Teachers conduct it in the form of a competition or a MCQ paper.
- Teachers maintain record of the same.

Evidence of success (outcomes):

1. Improved performance in university online examination.
2. Improved number of placements.
3. Improved participation in class activities.

Innovative Teaching – Learning Practices

Photograph(s): Quiz



Quiz conducted under Theory of computation Subject

Innovative Teaching – Learning Practices

Title: Role Plays

Objectives:

1. To demonstrate the concept through physical activity.
2. To involve everyone in the discussion/session.
3. To create interest and keep the participants engaged.

The Context:

The Role-play activity is one of the best teaching practices to demonstrate/illustrate a conceptual thought/idea, physically involving the participants(students). When it is played, students will have clear understanding of the topic under discussion. Moreover, it provides a platform for students to ask more questions and get clear understanding of the subject.

The practice:

- Initially the teachers explain the concept to be role played.
- Some of the students are asked to volunteer for the activity.
- As per the topic the teacher provides the script for the role play.
- Students prepare for their roles and demonstrate the concept in front of the class.
- Teachers maintain record/report of the activity.

Evidence of success (outcomes):

1. Adds more fun to learning (Evident from Student Feedbacks)
2. The conceptual knowledge gets transformed to some physical activity, that gets retained in memory for longer time (Good University Results)
3. Active participation in session (Good attendance)

Innovative Teaching – Learning Practices

Photograph(s): Role Plays

Students listening to the script

Students Performing Role Play

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Title: Group Discussion

Objectives:

1. To create an active learning platform to discuss on opinions/views on a particular topic.
2. To develop confidence and interpersonal skills.
3. To develop an ability to express the views in a clear and concise manner.
4. To expose students to different perspectives related to the topic.
5. To inculcate leadership quality.
6. To prepare students to work cohesively in a team.

The Context:

The affiliating university curricula lacks the contents for leadership quality, team building ability, interpersonal skills etc. To inculcate these qualities/abilities among the students group discussion is a very important aspect of group communication. Group discussions are a creative and dynamic activity which stimulates reflective thinking among the students.

The practice:

- Teachers prepare groups of students.
- Teachers provide a topic for discussion.
- Group members express their opinion/views on the given topic.
- Group leader prepares and submits the summary of the discussion.
- Teachers prepare the report of the activity.

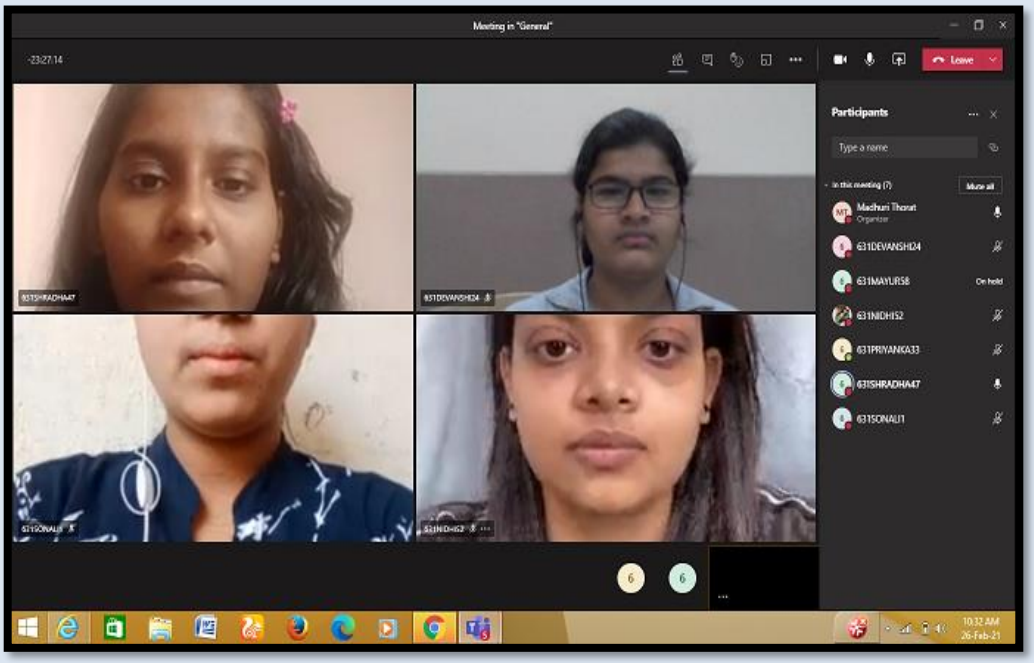
Evidence of success (outcomes):

1. Improved academic performance.
2. Increased number of placements.
3. Increased participation and achievements in co and extra-curricular activities.

Innovative Teaching – Learning Practices

Photograph(s): Group Discussion

Group Discussion Activity



Group Discussion Activity

Innovative Teaching – Learning Practices

Title: Library Hour

Objectives:

1. To enhance self-learning and reading skills of students as well as to keep them abreast with latest technology

The Context:

Being an educational Institute, library and the activities related to it play an important role. Reading habit in students inculcates a sense of knowledge gaining curiosity in them and so is the sense of being updated with the new technologies. With many books on platter students many a times due to busy curricular schedule and other routines get less quality time to be spent in library; library hours provide an extra quality period and opportunity for students to study, to do literature survey, work on difficulties in syllabus, do a little newspaper reading, magazines, periodicals etc.

The Practice:

- One hour is assigned for SE, TE, BE class in their timetable.
- One faculty member is assigned for Library hour.
- During that one-hour student read the books, journal, magazine, reference books etc.
- Student use E-resource facility available in library.
- At the end of the library hour, students write summary of activity done by them in standard format.

Evidence of success:

1. Increased footfall in library.
2. Increased usage of online and offline resources.
3. Improved communication skills.
4. Improvement in the quality of seminar and project topics.
5. Improved academic performance.
6. Increased in number of placements.
7. Increased number of paper publications.
8. Increased participation and achievements in project competitions.

Innovative Teaching – Learning Practices

Photograph(s): Library Hour

Students referring books in central library

Students referring journals, magazines in central library

Innovative Teaching – Learning Practices

Title: Case Study

Objectives:

1. To describe a concept with help of an individual scenario/situation
2. To identify the key issues of the scenario
3. To analyze the case using relevant theoretical concepts from your unit or discipline
4. To recommend a course of action for that particular case (particularly for problem-solving case studies).

The Context:

Case Study method is used to assist students in applying theory concept practically. This method allows the student to engage in the curriculum by adding a sense of realism to the contents of syllabus. This method includes student's active participation by understanding and applying concept in practical use and also provides scope to their higher studies.

The practice:

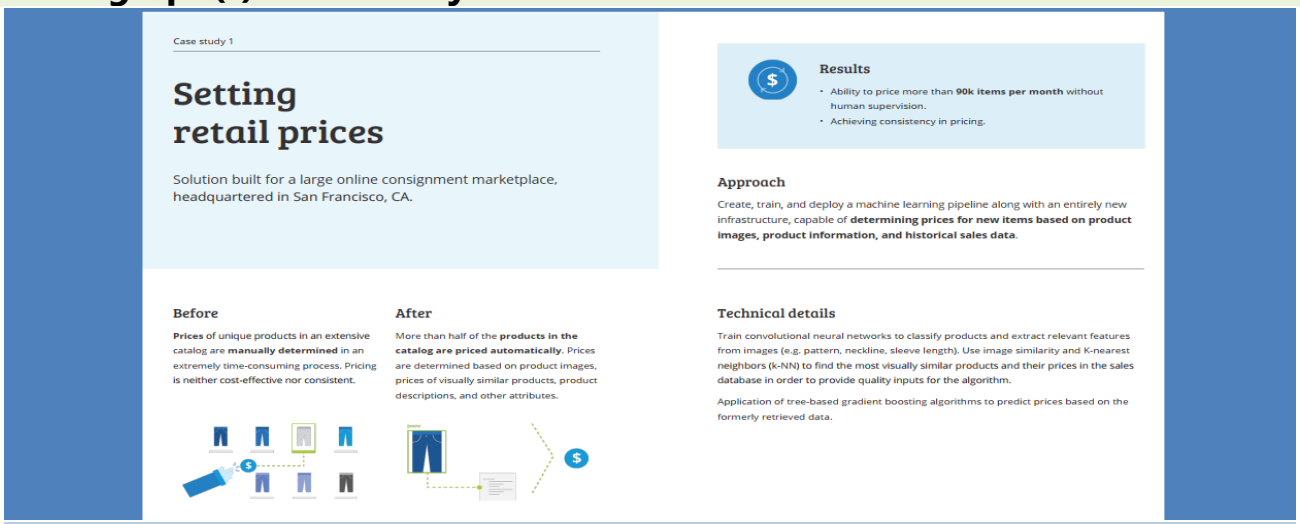
- Initially the concept is explained by teacher in class.
- Teachers ask students to come up with case studies for given topic.
- Student read/listen and examine the case/scenario thoroughly.
- Students discuss their views/key problems.
- Students uncover possible solutions/changes needed.
- Teachers discuss the best solution with group.
- Teachers prepare report of the activity.

Evidence of success (outcomes):

1. Increased participation of students in the class.
2. Improved academic performance.
3. Improved quality of project work.

Innovative Teaching – Learning Practices

Photograph(s): Case Study



Case study 1

Setting retail prices

Solution built for a large online consignment marketplace, headquartered in San Francisco, CA.

Results

- Ability to price more than **90k items per month** without human supervision.
- Achieving consistency in pricing.

Approach

Create, train, and deploy a machine learning pipeline along with an entirely new infrastructure, capable of **determining prices for new items based on product images, product information, and historical sales data**.

Before

Prices of unique products in an extensive catalog are **manually determined** in an extremely time-consuming process. Pricing is neither cost-effective nor consistent.

After

More than half of the **products in the catalog are priced automatically**. Prices are determined based on product images, prices of visually similar products, product descriptions, and other attributes.

Technical details

Train convolutional neural networks to classify products and extract relevant features from images (e.g. pattern, neckline, sleeve length). Use image similarity and K-nearest neighbors (k-NN) to find the most visually similar products and their prices in the sales database in order to provide quality inputs for the algorithm.

Application of tree-based gradient boosting algorithms to predict prices based on the formerly retrieved data.

Case study Conducted for subject - Machine Learning

6

Facebook

Facebook – it's the world's biggest social network by a huge margin, and most of us are used to using it to share details of our everyday lives with our friends and families. It's no secret now that we're also sharing it with their advertisers, but that hasn't put most of us off using it! So here's a brief rundown of how Facebook has been one of the most successful companies in the world at gathering our data and turning it into profit – and why some think its business practices sometimes overstep the mark.

Recently, Facebook has been causing a stir amongst those interested in online privacy and data protection. The latest accusations are that is has been carrying out unethical psychological research – effectively experimenting on its users without their permission. Critics have said that by attempting to alter people's moods by showing them specific posts with either a positive or negative vibe,

Case study conducted under Data Science & Big Data Analytics subject

Innovative Teaching – Learning Practices

Title: Brainstorming

Objectives:

1. To get new and creative ideas from students.
2. To encourage out of box ideas.
3. To make the class interactive.

The Context:

This practice is carried out to introduce new topic to the class. Also it helps in checking their understanding of the said topic and coming to a common definition and explanation of the topic.

The practice:

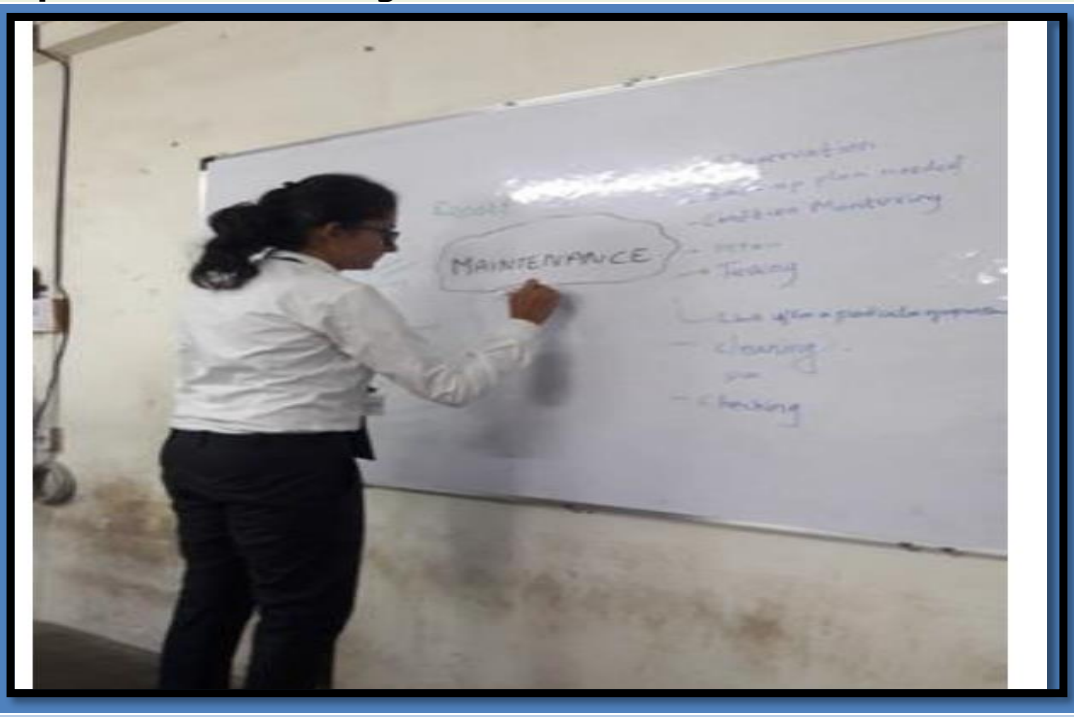
- Teacher writes one key word on board.
- Students are asked to come and write anything that comes to their mind when thinking of that word.
- A proper definition and understanding of the word is achieved through this exercise after discussing all points written on board.

Evidence of success (outcomes):

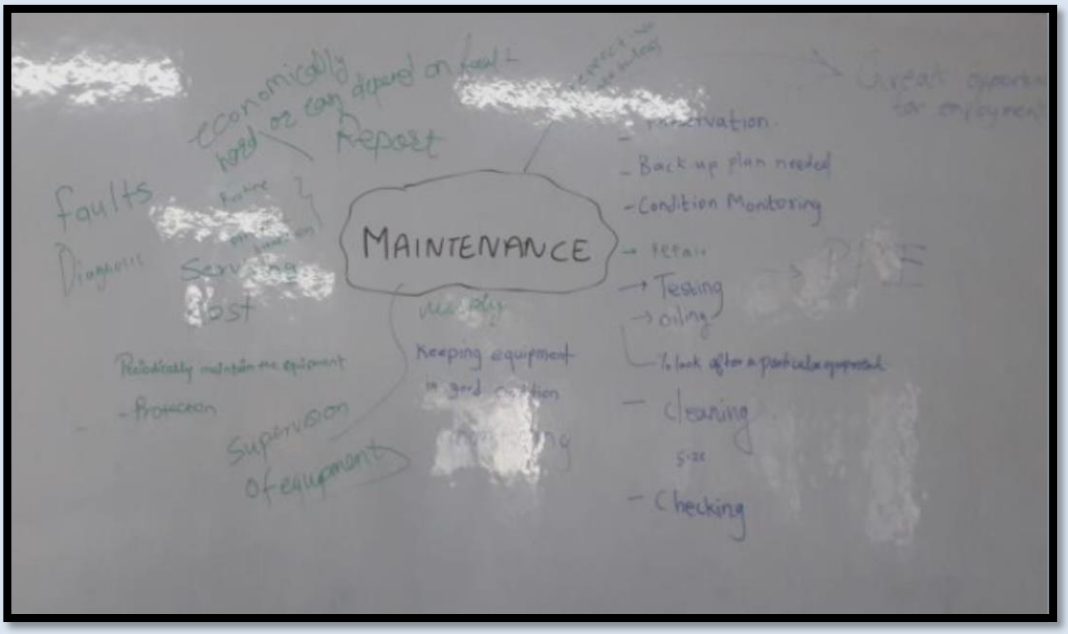
1. Improved academic performance
2. Increased participation of students in class

Innovative Teaching – Learning Practices

Photograph(s): Brainstroming



Student is writing her view/opinion about the word



Teacher discusses on all the words written by students to explain the concept

Innovative Teaching – Learning Practices

Title: Flipped Classroom

Objectives:

1. To reverse typical lecture and homework elements of a course.
2. To encourage self-learning.
3. To create an interest in the subject.
4. To use the class time for fruitful interaction and discussions.
5. To inquire lecture contents, clear doubts, test students' skills in applying knowledge and interact with one another in hands on activities.

The Context:

Flipped classroom is an interactive learning method to increase students' engagement and learning. Before starting any new topic in class, students are asked to complete readings at home and work on live problem-solving during class time. This saves time and develop students' ability to work as an individual as well as a team member.

The practice:

- Teachers provide short video lectures or study material to students to watch/read at home before the class session.
- During the in-class session teachers ask students to discuss/solve exercises based on the contents watched/read at home.
- Teachers prepare report of the activity.

Evidence of success (outcomes):

1. Improved academic performance.
2. Increased participation/interaction of students in class.
3. Better time management.

Innovative Teaching – Learning Practices

Photograph(s): Flipped Classroom

Students discussing in groups

Students explaining certain topics to class

Innovative Teaching – Learning Practices

Title: Blended learning

Objectives:

1. To integrate face to face learning with technology based digital instruction.
2. To promote collaboration, discussion and in-person learning among students.
3. To facilitate exchanging of the knowledge and experience with help of digital media.
4. To help students learn difficult concepts in less time.
5. To create interest and make them savvy with the new technology.

The Context:

Blended learning is generally perceived as a formal education program that integrates face to face learning with technology based digital instruction.

Blended learning is defined as, "Learning that combines two modes of instruction, online and face to face, but potentially different points in time".

Adoption of blended learning in institute is aimed to promote collaboration, discussion and in-person learning among students.

The practice:

- Teachers give instruction as to read a technical paper or watch a video to the students before the said class.
- The paper/video/topic is discussed in detail in class for better understanding.
- Teachers have adopted the Massive Open Online Courses (MOOCs) for blended learning.
- Teachers prepare report of the activity.

Evidence of success (outcomes):

1. Improved academic performance.
2. Increased curiosity and participation of students in class.
3. Enhanced time management.
4. Increased interests in new technology.

Innovative Teaching – Learning Practices

Photograph(s): Blended learning

Students watching video in class

Students discussing the contents from video