

### 5.5. Innovations by the Faculty in Teaching and Learning (20)

Faculties of Mechanical Engineering use both active and passive learning methods while teaching also using some innovative methods of teaching strategies that will help every teacher in the classroom.

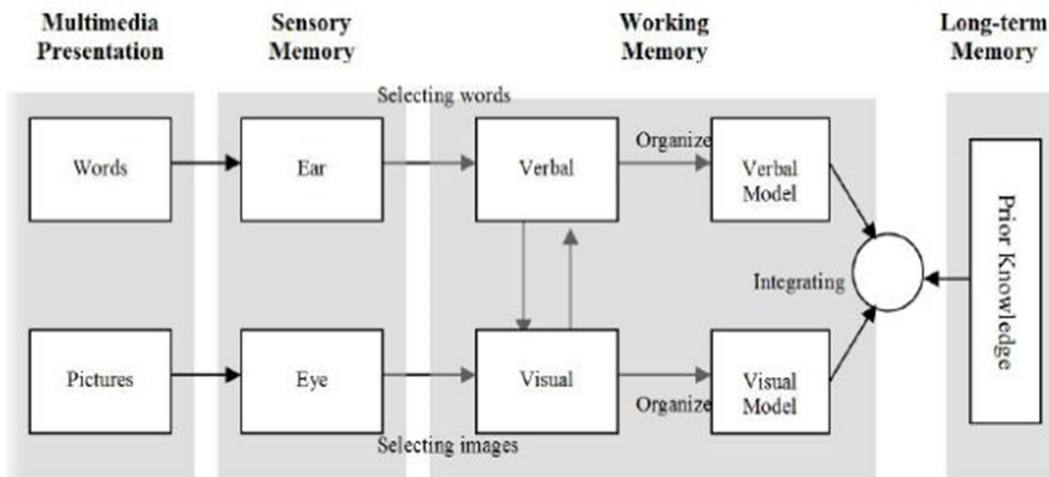
Here are some innovative teaching strategies which every teacher can embrace and make their teaching way more interesting:

- **TEACHING THROUGH ICT (MULTIMEDIA LEARNING)**
- **TEACHING THROUGH FLIPPING CLASSROOMS**
- **ACTIVE LEARNING METHODOLOGY: THINK-PAIR-SHARE**
- **CROSS OVER TEACHING :INDUSTRIAL VISITS AND EXPERT LECTURES**
- **GROUP LEARNING**
- **TEACHING THROUGH PROJECTS/PRACTICALS (PBL)**

#### TEACHING THROUGH ICT (MULTIMEDIA LEARNING):

Learning by sight and sound, is the blend of different computerized media types, for example, content, pictures, sound and video, into an incorporated multisensory intelligent application or introduction to pass on data to a crowd of people. Customary instructive methodologies have brought about a befuddle between what is educated to the understudies and what the business needs. Accordingly, numerous organizations are moving towards issue based learning as an answer for delivering graduates who are innovative; think fundamentally and diagnostically, to take care of issues. We center around utilizing interactive media innovation as an imaginative educating and learning methodology in an issue based learning condition by giving the understudies a sight and sound task to prepare them in this range of abilities.

Issue based learning is viewed as an imaginative measure to urge understudies to figure out how to learn through genuine issues. The educator utilizes mixed media to change the substance of the material. It will assist the instructor with representing in a progressively significant manner, utilizing diverse media components. These media components can be changed over into computerized structure, altered and redid for the last introduction. By consolidating advanced media components into the task, the understudies can adapt better,



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which would make them increasingly inspired to give careful consideration to the data introduced and hold the data better.

#### Goal

- ✚ Motivate the students do electronic presentation(PPT)
- ✚ Students can quick understood the topic
- ✚ Increase the student understanding level
- ✚ Assess the students through online quiz/Unit tests for better learning
- ✚ Enhance academics pass percentage of students
- ✚ Giving tips for on campus placement competition, GATE/CAT preparation etc.

#### Methods

- ✚ Use of ICT
- ✚ Faculty uses LCD projectors with audio for delivering the lecture

**Some common educational applications of ICT used are:**

Tools	Methods	Way
Power point Presentation	Preparation of power points slides of different subjects.	Slides & Video based
Smart Class Room	Teaching through Smart boards, Smart tablet for online teaching.	Interactive whiteboard based, Samsung Tablet.
E- Learning	Virtual lab site, Virtual programing site, Learning via NPTEL, YouTube, MOOCs, Swayam Prabha etc.	Through website or internet.
E-Readers	McGraw Hill Education, Pearson India Education Service available	Reading E books through Laptop, Mobile , Tablet etc.
Flip Class Room	Through Online interaction about given topic, Subject quizzes, Subject Notes, Assignments, attendance etc.	Google Class, Safe App, Google Drive.

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Education through ICT has been used in the following Subjects:-

S. No.	Name of faculty	Course Name	ICT tools	Semester	Assessment year
1	Shyam Singh Kanwar	Fluid Machinery	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	5 <sup>th</sup>	2019-20, 2020-21, 2021-22
		FEM Lab	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	3 <sup>rd</sup>	2019-20
		Mechanics of Solid II	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	4 <sup>th</sup>	2019-20, 2020-21, 2021-22
2	Uday Khakha	Machine Design 1 & 2	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	5 <sup>th</sup> & 6 <sup>th</sup>	2019-20, 2020-21, 2021-22
		Robotics	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	7 <sup>th</sup>	2019-20, 2020-21, 2021-22
		CAD/CAM	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	8 <sup>th</sup>	2019-20, 2020-21, 2021-22
3	Praveen Kumar Kujur	Manufacturing Science 1 & 2	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	4 <sup>th</sup> & 5 <sup>th</sup>	2019-20, 2020-21, 2021-22
		CAD Lab	Flip Class Room, E-Learning,	4 <sup>th</sup>	2019-20, 2020-21, 2021-22

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			Smart Class Room, E-Readers, PPT		
		Power Plant Engg	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	6 <sup>th</sup>	2019-20, 2020-21, 2021-22
		NACP	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	4 <sup>th</sup>	2019-20, 2020-21, 2021-22
4	S.K. Sahu	FM	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT		2019-20, 2020-21, 2021-22
5	S.K. Gavel	Turbo Machinery	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	5 <sup>th</sup>	2019-20, 2020-21, 2021-22
		Engg. Thermodynamics	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	3 <sup>rd</sup>	2019-20, 2020-21, 2021-22
6	Dr. G.K. Agrawal	Refrigeration & Air conditioning	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	7 <sup>th</sup>	2019-20, 2020-21, 2021-22
7	Ruchin Kumar	FEM	Flip Class Room, E-Learning, Smart Class Room, E-Readers, PPT	8 <sup>th</sup> Sem	2019-20

#### Benefits / Yield

🚦 Help understudies conceptualize and investigate any thought, idea, or issue

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- ✚ Encourage better comprehension of connections and associations among thoughts and ideas
- ✚ Make it simple to impart new thoughts and perspectives
- ✚ Enable understudies to effectively review data
- ✚ Help understudies take notes and plan assignments
- ✚ Make it simple to arrange thoughts and ideas

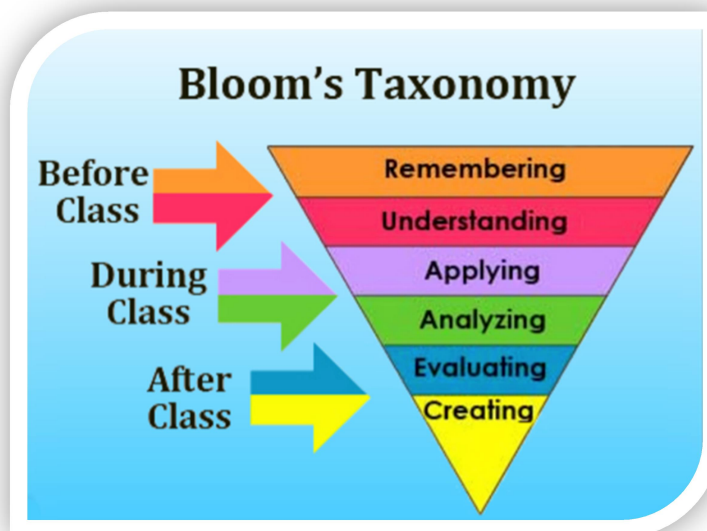
#### Peer Review and Critique

Interactive media devices utilized are recorded and the reports are submitted for companion survey with core committee for recognizing any challenges and proposals. The following are the guidelines given by the committee to implement the above method effectively.

- ✚ Use PPT's set up by separate personnel with quickly
- ✚ Identify the best possible themes with right connections, Websites and URL's
- ✚ Appropriate Teaching Aids, Methods and Tools to be utilized

#### TEACHING THROUGH FLIPPING CLASSROOMS:-

Conceptually, the flipped classroom inverts the traditional learning experience. Lectures are shared outside of class time for individual review as homework, problems and classroom time is reserved for students to complete assignments and activities.



#### Goals

- ✚ To make the classroom an active learning environment

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- ✚ To enable students to learn at their own pace, and
- ✚ To give the instructor more time to teach each student individually, rather than the class as a whole.

### Methods

- ✚ **Google Classroom:** Teachers use Google Classroom in a variety of ways—to deliver assignments to students and at the beginning of a lesson, teachers can direct students to assignment goals, objectives, and instructions in Classroom. Here we are using mostly google classroom for flipping the class.
- ✚ **Quizizz:** Formative assessment is extremely important in any classroom, and flipped classrooms are no exception. Teachers can create gamified formative assessment activities for their students using, Quizizz and assign these activities as homework, which allows the students to give the quizzes/games individually. Here we are using google classroom and SAFE app for quiz
- ✚ **Padlet:** After students have viewed an instructional video, it's a good idea to provide them with an opportunity to reflect on the content. Padlet provides teachers with a way to have students not only review and reflect on content, but also collaborate with their peers.
- ✚ **Edpuzzle:** Allow teachers to do just that, and it provides teachers with the ability to embed a variety of formative assessments into videos they create or use from other sources. Students can access Edpuzzle videos from any browser or through iOS or Android apps, so it's very convenient.

### Benefits

- ✚ Flipping allows students to learn at their own space
- ✚ Flipped learning is customized, active, and engaging
- ✚ Flipped lecture videos help student review for exams
- ✚ Students in flipped classrooms perform better
- ✚ Flipping helps busy students.
- ✚ Flipping increases student-teacher interaction.
- ✚ Flipping allows teachers to know their students better.

### Peer Review and Critique

Flipping classrooms is very effective in teaching engineering subjects because some of the subject required prerequisites of some kind. Flipping classroom is more effective while using Edpuzzle and quizzes games in formative assessment of class as suggested by senior members. The following are the guidelines given by the committee to implement the flip classroom effectively.

- ✚ Teacher ensure that student cover whole syllabus before test of assignment.
- ✚ Teacher try to provide all relevant resources of subjects
- ✚ Teacher ensure parent also involve in flip class room with students.

### ACTIVE LEARNING METHODOLOGY: THINK-PAIR-SHARE

Think-pair-share (TPS) is a collaborative learning strategy where students work together to solve a problem or answer a question about an assigned reading. This strategy requires students to (1) think individually about a topic or answer to a question; and (2) share ideas with classmates. Discussing with a partner maximizes participation, focuses attention and engages students in comprehending the reading material.



#### Goals

- ✚ It helps students to think individually about a topic or answer to a question.
- ✚ It teaches students to share ideas with classmates and builds oral communication skills.
- ✚ It helps focus attention and engage students in comprehending the reading material.

#### Method

**T : (Think)** Teachers begin by asking a specific question about the text. Students "think" about what they know or have learned about the topic.

**P : (Pair)** Each student should be paired with another student or a small group.

**S : (Share)** Students share their thinking with their partner. Teachers expand the "share" into a whole-class discussion

#### Benefits

- Learn new things beyond curriculum
- Useful in attending any technical interview in placements
- To Gain useful knowledge about a particular technology

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#### Outcomes

- ✚ Think-Pair-Share promotes understanding through active reasoning and explanation and encourages students to understand multiple perspectives.
- ✚ As a Practice Activity, this strategy encourages students to think about something, such as a problem, question or topic, and then articulate their thoughts.

**Think-Pair-Share (Active learning technique) has been used in the following Subjects:-**

S. No.	Name of faculty	Course Name	Semester	Assessment year
1	Shyam Singh Kanwar	Fluid Machinery	5 <sup>th</sup>	2019-20, 2020-21, 2021-22
		Mechanics of Solid II	4 <sup>th</sup>	2019-20, 2020-21, 2021-22
2	Uday Khakha	Machine Design 1 & 2	5 <sup>th</sup> & 6 <sup>th</sup>	2019-20, 2020-21, 2021-22
		Robotics	7 <sup>th</sup>	2019-20, 2020-21, 2021-22
		CAD/CAM	8 <sup>th</sup>	2019-20, 2020-21, 2021-22
3	Praveen Kumar Kujur	Manufacturing Science 1 & 2	4 <sup>th</sup> & 5 <sup>th</sup>	2019-20, 2020-21, 2021-22
		NACP	4 <sup>th</sup>	2019-20, 2020-21, 2021-22
4	S.K. Sahu	Fluid Mechanics	4 <sup>th</sup>	2019-20, 2020-21, 2021-22
5	Satish Kumar Gavel	Applied thermodynamics	3 <sup>rd</sup>	2019-20, 2020-21, 2021-22

#### Peer Review and Critique

During classes Think-Pair-Share active learning methodology were seen and observed by the core committee for any difficulty and suggestions. The following are the guidelines given by the committee to implement the above method effectively.

- ✚ Select the Concepts and Mechanical engineering very carefully which is easy to remember
- ✚ Identify the students who not performed, or don't want to participate
- ✚ Create friendly environment for students to participate



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### CROSS OVER TEACHING (INDUSTRIAL VISITS AND EXPERT LECTURES):

While this form of teaching does not include technology, it is an enriching experience for the student as well as the faculty. Here, the learning happens in an informal setting such as after-class time or outside of the institute, or trips/visits to industry, plants and industry expert talks.

Exposure to real life industries is one of the key elements to achieve all the Program Outcomes (PO) for students graduated from Mechanical Engineering. These activities are important for engineering students to relate their theoretical knowledge to practical or real aspects of what they studied in their subjects, in terms of industrial unit operations, process and design concepts, and impact of its activities on health, safety, environment and society.

#### Goals

To give understudies an understanding with respect to inner working of organizations and enterprises.

#### Context

- ✚ Mechanical visit is considered as one of the strategic techniques for educating.
- ✚ The fundamental purpose for this is makes a difference understudy to know things for all intents and purposes through collaboration, working techniques what's more, work rehearses.
- ✚ It additionally gives a decent chance to the understudies to pick up mindfulness about modern practices.
- ✚ Through modern visit understudies get mindfulness about new advancement

The Faculty of Mechanical Engineering proposed that students from each academic year should be exposed to industrial talks and industrial visits (for each semester).

#### List of expert talks (online/offline) during assessment year:

Year	Topics	Technical Talk	Date	Semester	Faculty	Resource Person/Organization	Relevance to POs & PSOs
2020-21	Kinematics and dynamics of Robots	Webinar	23 May 2020	4 <sup>th</sup> 6 <sup>th</sup> 8 <sup>th</sup> Sem	Uday Khakha, Shyam Singh Kanwar	Dr. Vijay Kumar Dalla (NIT Jamshedpur)	PO1,PO5,PO 7 & PSO1

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	Aerospace Industry in India	Webinar	30 May 2020	4 <sup>th</sup> 6 <sup>th</sup> 8 <sup>th</sup> Sem	Satish Gavel, Shyam Singh Kanwar	Mr. Abhijit Sinha (Director & CEO of Sinmayawa industries india )	PO1,PO5,PO 7 & PSO1
	Oil And Gas Scenario and future prospects	Webinar	20 June 2020	4 <sup>th</sup> 6 <sup>th</sup> 8 <sup>th</sup> Sem	Uday Khakha	Mr. Ved Prakash Mahawar( Former Director ONGC)	PO1,PO5,PO 7 & PSO1
2019-20	Career in CAE	Offline	05/10/2019	4 <sup>th</sup> m 6 <sup>th</sup> , 8 <sup>th</sup>	Dr. G.K. Agrwal , Shyam Singh Kanwar	Mr. Gourav Tandan ( Senior CAE Analyst , Mercedes Benz)	PO1,PO5,PO 7 & PSO1
2018-19	Manufacturing Science and its application	Offline	23/2/2019	4 <sup>th</sup> m 6 <sup>th</sup> , 8 <sup>th</sup>	Dr. G.K. Agrwal , Shyam Singh Kanwar, Satish gavel	Dr. Rahul Jain (IIT Bhilai )	PO1,PO2,PO 3, PO5,PO9 & PSO1,PSO2

#### List of industrial visits during assessment year:

Year	Topics	Industrial Visit	Date	Semester	Faculty	Visiting Industry	Relevance to POs & PSOs
2021-22	Power and Inspat	Visit offline	1 Oct. 2022	7 <sup>th</sup>	Avinash Ranjan Patnaik and Satish gavel	Shri Bajrang Power and Inspat Ltd. Raipur CG	PO1,PO2,PO 3, PO5,PO9 & PSO1,PSO2
	Power plant	Visit offline	21 Oct. 2022	5 <sup>th</sup>	Praveen Kumar and Uday	ABVTS Champa CG	

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					Kahakha		PO1,PO2,PO3, PO5,PO9 & PSO1,PSO2
2018-19	Plastic Manufacturing	Industrial Visit	8.12.2018	5 <sup>th</sup>	Satish Gvel, S.S. Kanwar	CIPET Raipur	PO1,PO2,PO3, PO5,PO9 & PSO1,PSO2
	Plastic Manufacturing	Industrial Visit	27.12.2018	7 <sup>th</sup>	Uday khakha	CIPET Raipur	
	Thermal Power Plant	Industrial Visit	29.03.2019	7 <sup>th</sup>	Ruchin Kumar	ABV Thermal Station Janjgir-Champa	PO1,PO5,PO10 & PSO1

#### Peer Review and Critique

Based on the weaknesses and challenges discussed, several ways for improvement are suggested here. Since the activities have been carried out since 2015, a database that keeps the information of suitable and relevant industries/companies and speakers is being compiled. This is to ensure that future visits and talks can be better arranged. Also some suggestions from the core faculty members of the college are

- ✚ Indirect assessment for all program outcomes and also for program specific outcomes
- ✚ Proper arrangement for traveling, food and staying for the students
- ✚ Feedback also be taken from the students after visit

#### GROUP LEARNING:

The Instructional innovation is essential for engineering courses and programs highlight the need for a solid foundation of education at the engineering level on which to base practice. The analysis of group learning demonstrates that various forms of group learning are effective in promoting capability of students, attitudes toward learning through engineering courses and programs. In this method, a collection of students who are intellectually and aesthetically engaged in solving problems, writing computer programs, creating products, and an assemblage in which each student learns autonomously in different ways of learning with others. By group, we refer both to the learning of individuals that is fostered by being in a group and to a more distributed kind of learning that does not reside inside the head of any one individual. Rather than focusing only on what the individual knows, the goal is to build a

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collective body of knowledge; learning groups strive to create publicly shared understandings.

#### Goals

- ✚ Ability to learn any new things very effectively and easily
- ✚ Motivate to improve the Group Discussion(GDs), Project seminar
- ✚ Express their knowledge and view on selected topic

#### Method

- ✚ Creating group of students and each group consists of 6 to 7 students
- ✚ Taking a session as discussions on any emerging topic in mechanical engineering with pros, cons and methods
- ✚ Student coordinator will justify and make to learn all students on specific topic in depth

#### Benefits

- ✚ Democratic process of teaching & learning
- ✚ Student can able to demonstrate any topic technically and fluently without fear
- ✚ Gain the implicit knowledge about topic

**Following group learning practices by the faculty members for improving teaching and learning experience.**

S. No.	Best Practices	Goals	Context	Relevance to POs & PSOs
1	Group Discussion	To develop skills in interpersonal communication and in expressing views in a clear and concise manner.	<ul style="list-style-type: none"><li>- Gain viewpoint and perspective which builds the tuning in and relational ability.</li><li>-Learn from other students experiences and background knowledge</li><li>-Identify and sort out the communication Problems.</li></ul>	PO09, PO10
2	Mini and Major technical projects	To expand technical understandings through development in terms of software solutions and	Create opportunities to explore theory, to research and present a pilot project with a possibility of	PO1, PO5, PO3, PO5, PO9 PSO1, PSO2

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		hardware implementation for industrial/societal problems.	further development, to test a technical insight, to apply intellectual learning, or to challenge skills as well as understandings within a particular field.	
3	Aptitude training and tests & Communication Skill Development : Through Employability Skill Training	<ul style="list-style-type: none"> <li>-To improve verbal communication skill for effective speaking</li> <li>-To fulfilled the needs of students for placements and other competitive exams</li> </ul>	<ul style="list-style-type: none"> <li>-Sharing of Knowledge by imparting in ordinary communication</li> <li>Time the executives achieved by conveying course.</li> <li>-Vocabulary and open talking capacity gets represented.</li> <li>- By learning the aptitude skills, students will be able to tackle presence of mind situation.</li> <li>- The goals &amp; motives of future Career Selection open with the passing time.</li> </ul>	PO2,PO10
4	Student Seminars	The overall goal of this activity is to motivate students for self-study and Group Study.	<ul style="list-style-type: none"> <li>-The communication skill gets improved by Oral Communication in seminars.</li> <li>- Student takes responsibility while working in a team.</li> <li>- Students learn Time Management skill.</li> </ul>	PO10,PO9.PO11

### Peer Review and Critique

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Checked with the subjects is given to peer review and core committee for identifying any difficulties and suggestions. The following are the guidelines given by the committee to implement the above method effectively

- ✚ Use latest topic in Electronics for debate/group discussions like any new technologies, tools and software's etc.
- ✚ Faculty coordinator should prepare the guidelines and prior discuss with the students
- ✚ Use of Appropriate Assessment Methods to measure the Students performance (Ex. Quiz, via-voce etc.)

### TEACHING THROUGH PROJECTS/PRACTICALS (PBL):-

The previous methodology of passively acquiring information and reciting them out of context is no longer adequate to prepare kids for today's society. Students must have both foundational (reading, writing, and math) and 21st century skills (teamwork, problem solving, research gathering, time management, information synthesising, and utilising high-tech tools) to solve highly complex problems.

Why PBL? In problem-based teaming, students work together in small groups to solve real-world problems.

Students	Faculty
<ul style="list-style-type: none"><li>• Increases motivation to learn</li><li>• Develops critical thinking, writing, and communication skills</li><li>• Enhances retention of information</li><li>no</li><li>• Provides a model for lifelong learning</li></ul>	<ul style="list-style-type: none"><li>• Not to provide easy answers, but to facilitate collective process and learning.</li><li>• Instructors are able to learn with their pupils, reinvigorating their enthusiasm for teaching.</li><li>• Creating challenging issues that encourage students to achieve the course's learning objectives.</li></ul>

#### Goals:

- ✚ High-quality project-based learning aims to teach academic core knowledge and skills while also fostering deeper understanding.
- ✚ Develop critical thinking, problem-solving, communication, cooperation, and creativity/innovation abilities to help you succeed in the twenty-first century.
- ✚ Assist students in becoming more conscious of their academic, emotional, and social growth.

#### Methods:

- ✚ Identify a one-of-a-kind difficulty or issue.
- ✚ Investigate the problem utilising the inquiry process and use what you've learned in the discipline.
- ✚ Through collaborative activities, explore and challenge the ideas.
- ✚ Utilize the inquiry process to refine products.
- ✚ Use the enquiry procedure to fine-tune your items.

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### Benefits:

- ✚ It provides the teacher with many assessment options.
- ✚ It gives a student the opportunity to show off his or her abilities while working alone.
- ✚ It demonstrates the student's capacity to put desired skills, such as research, into practise.
- ✚ It improves a student's ability to collaborate with others, as well as collaboration and group abilities.
- ✚ It allows the teacher to gain a better understanding of the student as a person.

### Peer Review and Critique:

Based on discussion with senior faculty, several ways for improvement are suggested here. A database that keeps the information of suitable and relevant industries/companies, cutting-edge technology and speakers is being compiled. This is to ensure that future skill technology, industry related problems can be taken for problems. Also some suggestions form the core faculty members of the college are

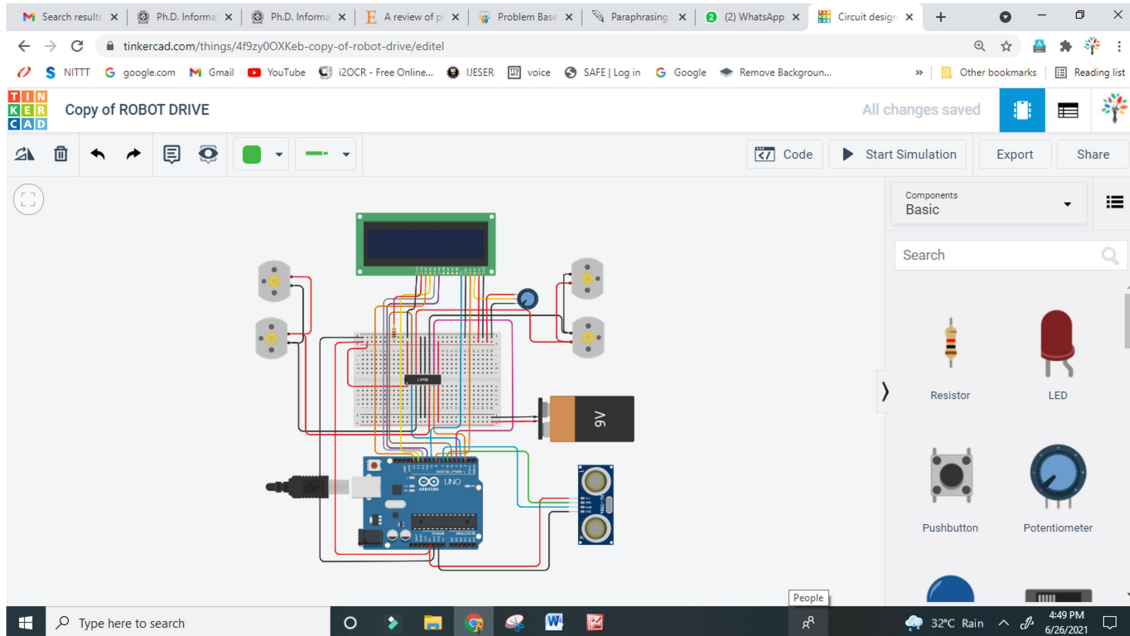
- ✚ Problems/area taken related to industry 3.0
- ✚ Group of 5 students is better for one problem
- ✚ Feedback also is taken from the students after giving his/her group report.



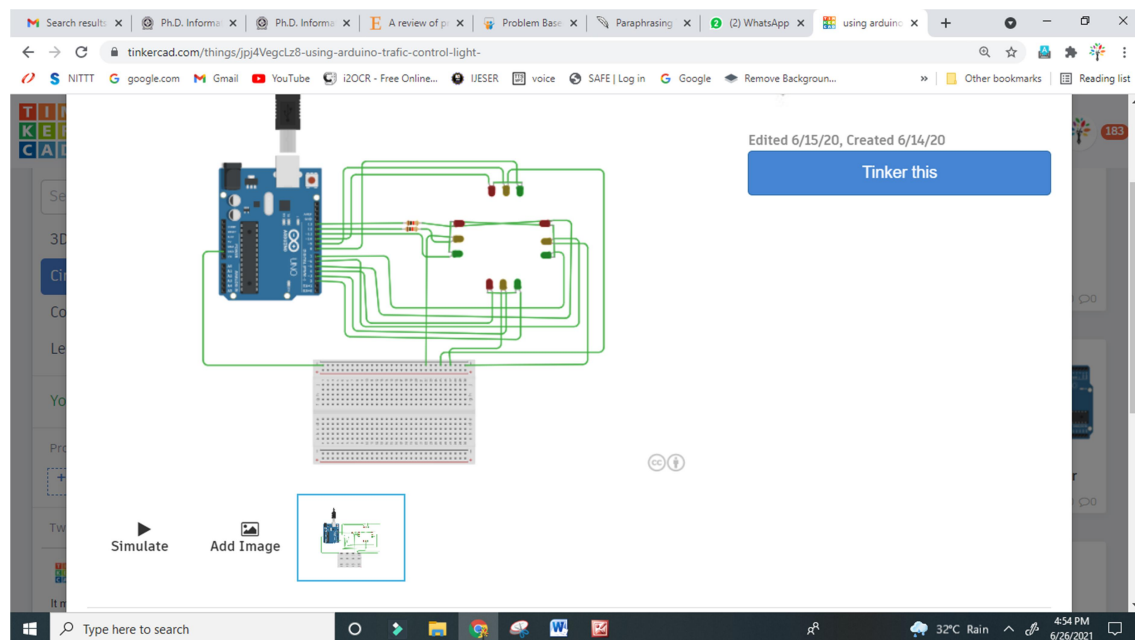


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3) Obstacle Avoiding Robot using Arduino kit: Modelling and simulated by student group which include Arduino microcontroller programming and use of various sensors in drivers.



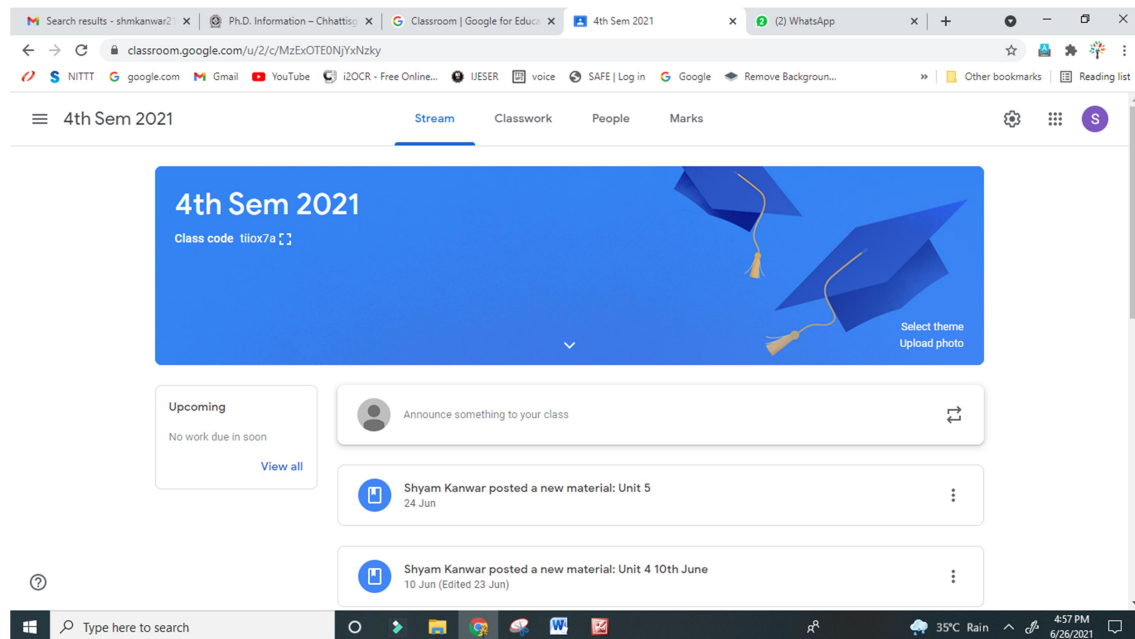
4) Traffic light control using Arduino kit: Modelling and simulated by student group which include Arduino microcontroller programming and use of various sensors in drivers.



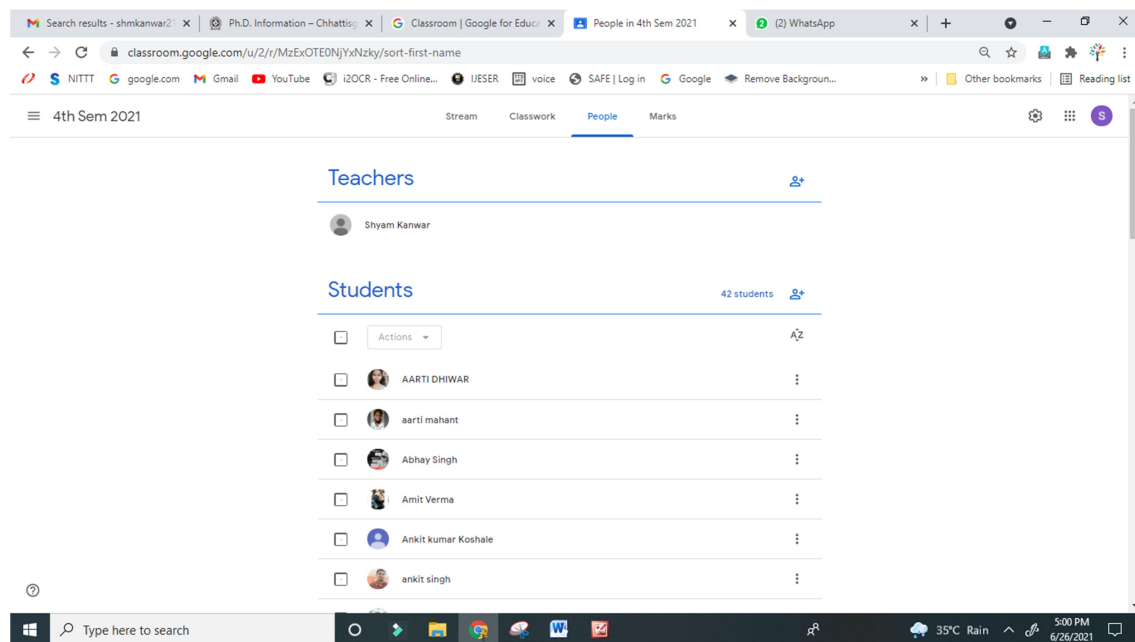
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### Flip Classroom/ Google classroom:

#### 1) Creation of Classes:



#### ii) Teacher and students in classrooms:



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iii) Uploading of subject notes unit wise in classes:

The screenshot shows the Google Classroom interface for a class named "4th Sem 2021". The "Classwork" tab is selected, displaying a list of units. The unit "Unit 4 10th June" is highlighted, showing it was edited on 23 Jun. Below the unit title, there are two material cards: "Notes\_210610\_114330.pdf" and "tortion and spring RK raj... PDF". To the right of these cards, there is a video thumbnail titled "Understanding Torsion" with a duration of 10 minutes. A "View material" link is visible at the bottom of the unit card. The top navigation bar includes "Stream", "Classwork", "People", and "Marks". The bottom status bar shows the time as 4:58 PM on 6/26/2021.

iv) Paperless Assignment to students using Google Classroom facility:

The screenshot shows the Google Classroom interface for "Assignment 1" in the "4th Sem 2021" class. The "Student work" tab is selected, displaying a list of students and their submission status. The assignment is worth 100 points. The "All students" list on the left shows the following students and their scores: AARTI DHIWAR (100), aarti mahant (100), Abhay Singh (100), Amit Verma (100), and Ankit kumar Koshale (100). The main area shows the assignment details and a grid of student submissions. The submissions are: AARTI DHIWAR (assl.01 Aarti dhiwar.pdf), aarti mahant (Assignment 01( SOM)...), Abhay Singh (Som\_01\_abbay\_singh...), Amit Verma (SOM Assignment-01...), Ankit kumar Koshale, ankit singh, Arvind Kujur, and Ashutosh Painkra. The top navigation bar includes "Instructions" and "Student work". The bottom status bar shows the time as 5:02 PM on 6/26/2021.

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### v) Online Quiz via SAFE app (Bodhee Tree) IITB :

The screenshot shows the SAFE app interface for a quiz titled "Quiz: Unit Test 1" for the course "ME4TH2021 - Strength of Material". The page has a navigation bar with tabs: Questions, Quiz Settings, Run Quiz, Submissions, Manual Grading, Statistics, and Security Report. The "Questions" tab is active, showing a question about isotropic materials. The "Quiz Settings" sidebar on the right shows settings for Duration (0:27:00), Negative Marks (0.00 marks), Show Marks at end (unchecked), Show Answers at end (unchecked), and Randomize Questions (checked).

SAFE Exam Standard Operating Procedures  
SAFE Support Request

Quiz: Unit Test 1  
Course: ME4TH2021 - Strength of Material

Questions Quiz Settings Run Quiz Submissions Manual Grading Statistics Security Report

All Questions

Image and LaTeX Equations help  
Question #1 (SINGLE\_CORRECT\_ANSWER) - 1 mark - id: 223927  
A material with identical properties in all directions is known as  
Category:

☒ isotropic  
☐ homogeneous  
☐ elastic  
☐ none of these

Quiz Settings

Duration 0:27:00  
Negative Marks 0.00 marks  
Show Marks at end ☐  
Show Answers at end ☐  
Randomize Questions ☒

### vi) Grade sheet of online quiz :

The screenshot shows the SAFE app interface for a quiz titled "Quiz: Unit Test 1" for the course "ME4TH2021 - Strength of Material". The "Submissions" tab is active, showing a table of accepted quiz submissions. The table has columns for ID, Username, Rollno, Name, Instance, Marks (before security flags), Security flags, Final marks, Submit time, Upload Time, and View. Two submissions are listed.

SAFE Exam Standard Operating Procedures  
SAFE Support Request

Quiz: Unit Test 1  
Course: ME4TH2021 - Strength of Material

Questions Quiz Settings Run Quiz Submissions Manual Grading Statistics Security Report

Submission Type Normal Submissions Instances All Instances Filter  
Download Re-evaluate Unsigned image submissions

Accepted Quiz Submissions (In-Envelope)  
Legend for colour coding of submissions:  
Late upload of on-time submissions  
Late upload of late submissions  
System replicate

Show 100 entries Search:

ID	Username	Rollno	Name	Instance	Marks (before security flags)	Security flags	Final marks	Submit time	Upload Time	View
2827596	sahasagar19543@gmail.com	300703719034	Sagar Sahu	ME4TH2021.TZ	8.00	L	0	May 4, 2021, 4:21 p.m.	May 4, 2021, 4:21 p.m.	
2827610	ashutoshpalkra316@gmail.com	300703719008	Ashutosh	ME4TH2021.TZ	6.00	L	0	May 4, 2021, 4:21 p.m.	May 4, 2021, 4:21 p.m.	

## 5.5. Innovations by the Faculty in Teaching and Learning

vii) Online Attendance via Safe App.: student mark their attendance using smart phone via selfie of roll number.

The screenshot shows the SAFE app interface for the course ME4TH2021 - Strength of Material. The page is titled "Attendance" and includes a "Start" button for the attendance window. Below this is an "Attendance Overview" section with a date selector (06/08/2021) and a "Consolidate Attendance" button. A table displays student attendance records with columns for Rollno, Name, Attendance, Last attendance, L conf, F conf, Status, and Flags. The table shows four students with their respective attendance status (VERIFICATION\_PENDING).

Rollno	Name	Attendance	Last attendance	L conf	F conf	Status	Flags
300703719002	AARTI DHIWAR	1	08-06-2021, 11:31:51	0	0	VERIFICATION_PENDING	
300703719003	Abhay Singh Rajput	0	08-06-2021, 11:26:32	0	0	VERIFICATION_PENDING	F
300703719015	Ishu Patel	2	08-06-2021, 11:59:00	0	0	VERIFICATION_PENDING	
300703719028	Nikhileswar Khute	1	08-06-2021, 11:21:20	0	0	VERIFICATION_PENDING	

viii) Google Drive for Mechanical Students : here they will find Subject notes , Student Gallery, Open Software's, Lab manuals, Previous Question papers, Previous Assignments etc.

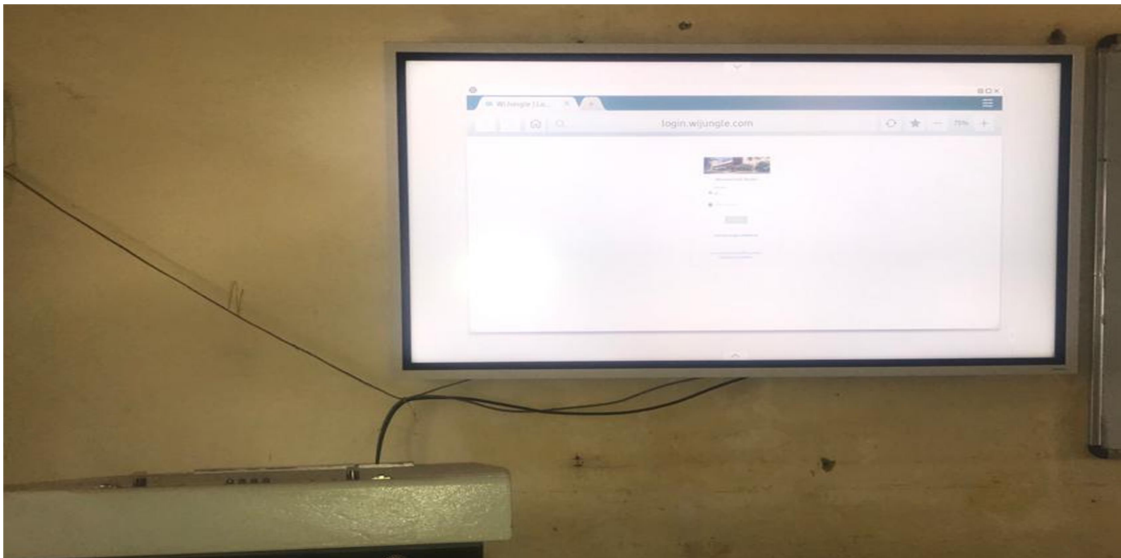
<https://drive.google.com/drive/u/5/folders/1MEvz2M75p86uvHKGcx9QLF0ITozVoSJS>

The screenshot shows a Google Drive folder named "Mechanical Engineering". The folder contains several sub-folders and files, including "Syllabus\_all\_Semester", "Subject Notes", "Student Gallery", "Robotics Workshop", "Program Outcomes(POs),PEOs,...", "Open Software Packages", "LAB\_Manuals", "International & National Journals", "Innovations by the Faculty in Tea...", "End Semester Question paper", "Departmental Newsletter", "Course Outcomes (COs)", "Class Test Papers", and "Assignments". The interface also shows a search bar and a sidebar with navigation options like "My Drive", "Computers", "Shared with me", "Recent", "Starred", "Trash", and "Storage".

### 5.5. Innovations by the Faculty in Teaching and Learning

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**Samsung interactive digital teaching board: Classroom G23, BE 3<sup>rd</sup> & 4<sup>th</sup> Sem.**



**Samsung interactive digital teaching board: Classroom G-73, BE 7<sup>th</sup> & 8<sup>th</sup> Sem**





### 5.5. Innovations by the Faculty in Teaching and Learning

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**Digital interactive Teaching Device: Class room G24, BE 5th & 6th Sem**



**For Each Faculty of Department: Samsung Galaxy Tab S6 Lite, 10.4 inch), Wi-Fi Tablet 4 GB RAM, 64 GB with stylus:**

