



RAMCO INSTITUTE OF TECHNOLOGY

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NBA Accredited UG Programs: CSE, EEE, ECE and MECH

Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)

Degree, Semester & Branch: II Semester B.E. EEE
Course Code & Title: EE3251 Electric Circuit Analysis
Name of the Faculty member (s): Mr. A. Arun Kumar

Innovative Practice Description

❖ **Unit / Topic:** Unit I / DC circuits – Kirchoff's Laws

- **Course Outcome:** CO 21
- **Topic Learning Outcome:** TLO 2
- **Activity Chosen:** One minute paper
- **Justification:**

One-minute paper activity provides a conceptual bridge between successive class periods. Improve the quality of class discussion by having students write briefly about a concept what they understand in the class.

Time Allotted for the Activity: 02 minutes

• **Details of the Implementation:**

At the end of the class, students were asked to write about the topic discussed in the class. The students expressed the understood content and the content which were not clear in that particular topic. This activity shows whether the students can able to understand the specific topic and their involvement the particular class.

CO – PO / PSO mapping:

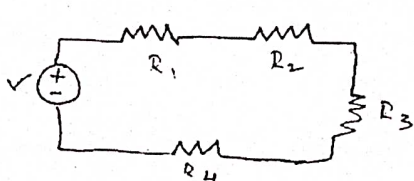
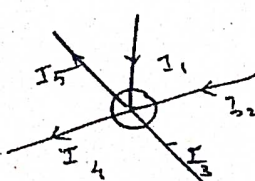
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	1	1	-	-	-	1	-	-	1	1	-	-

(1 – Low 2 – Moderate 3 – High)

• **PO / PSO mapped:**

Innovative practice	PO9
	1
Justification for correlation	The students can Function effectively as an individual

• Images / Screenshot of the practice:

Innovative Teaching Method Execution
DC circuits – Kirchoff's Laws – One minute paper
<p style="margin: 0;">Smidhan</p> <p style="margin: 0;">953621105048</p> <p style="margin: 10px 0 0 0;">1</p> <h2 style="margin: 0;">ONE MINUTE PAPER</h2> <p style="margin: 10px 0 0 0;">① KIRCHHOFF'S VOLTAGE LAW</p> <p style="margin: 5px 0 0 0;">The sum of voltage around a loop is zero</p> <div style="text-align: center; margin: 10px 0;">  </div> <p style="margin: 10px 0 0 0;">② KIRCHHOFF'S CURRENT LAW</p> <p style="margin: 5px 0 0 0;">The total current entering at a junction is equal to leaving at a junction.</p> <div style="text-align: center; margin: 10px 0;">  </div>

• Reflective Critique:

❖ **Feedback of practice from students and other stakeholders:**

- ✓ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

❖ **Benefit of the practice:**

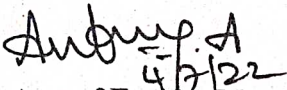
- ✓ Students can able to attend the question even in the questions are in indirect form.
- ✓ Students can able to explain the concepts in examination without any confusion.

❖ **Challenges faced in implementation:**

- ✓ Time utilization for conducting activity.

References:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", McGraw Hill publishers, 9th edition, New Delhi, 2020.
2. Charles K. Alexander, Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", Second Edition, McGraw Hill, 2019.
3. Allan H. Robbins, Wilhelm C. Miller, "Circuit Analysis Theory and Practice", Cengage Learning India, 2013.


Signature of Faculty Member

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Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)

Degree, Semester & Branch: II Semester B.E. EEE

Course Code & Title: EE3251 Electric Circuit Analysis

Name of the Faculty member (s): Mr. A. Arun Kumar

Innovative Practice Description

❖ Unit / Topic: Unit II / Maximum Power Transfer theorem

- Course Outcome: CO 2
- Topic Learning Outcome: TLO 7
- Activity Chosen: Demonstration
- Justification:

After teaching the concept of Maximum Power Transfer theorem, I thought of conducting demonstration for easy and better understanding of the concept.

Time Allotted for the Activity: 10 minutes

- Details of the Implementation:

Demonstration of maximum power transfer theorem using MATLAB/Simulink. The students can able to understand the concept easily

CO – PO / PSO mapping:

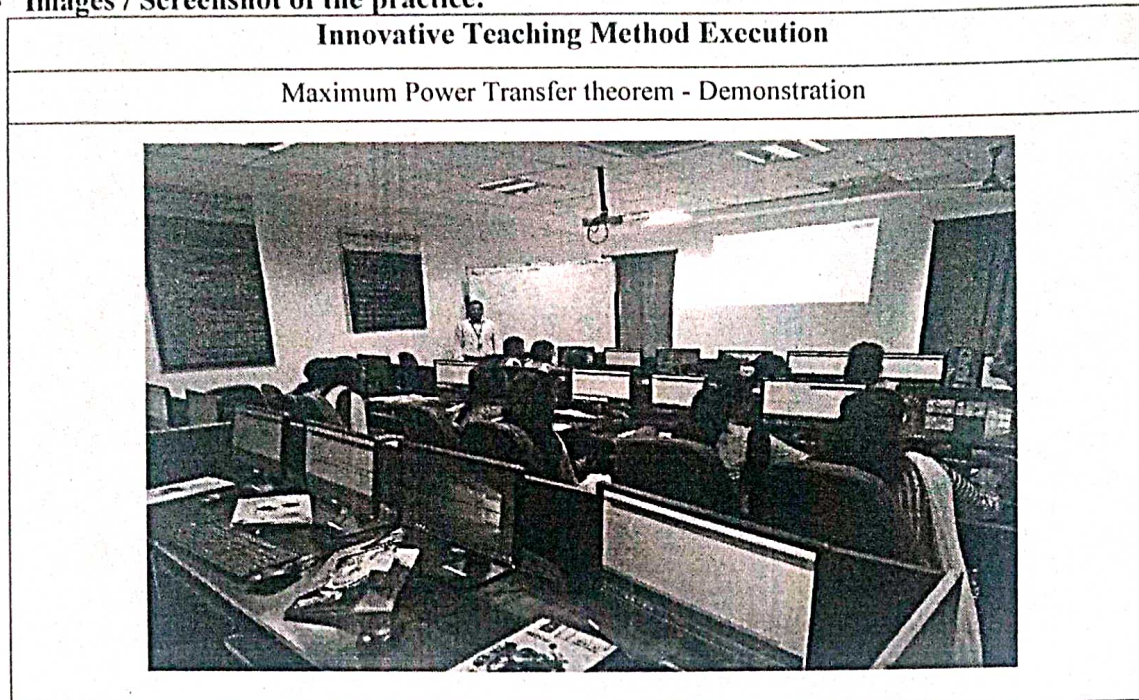
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO2	2	2	1	1	1	-	-	-	1	-	-	1	1	-	-

(1 – Low 2 – Moderate 3 – High)

- PO / PSO mapped:

Innovative practice	PO5
	1
Justification for correlation	The students can Function effectively use the MATLAB software

• Images / Screenshot of the practice:



• Reflective Critique:

❖ *Feedback of practice from students and other stakeholders:*

- ✓ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

❖ *Benefit of the practice:*

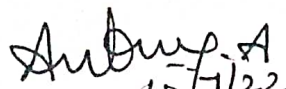
- ✓ Students can able to attend the question even in the questions are in indirect form.
- ✓ Students can able to explain the concepts in examination without any confusion.

❖ *Challenges faced in implementation:*

- ✓ Time utilization for conducting activity.

References:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", McGraw Hill publishers, 9th edition, New Delhi, 2020.
2. Charles K. Alexander, Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", Second Edition, McGraw Hill, 2019.
3. Allan H. Robbins, Wilhelm C. Miller, "Circuit Analysis Theory and Practice", Cengage Learning India, 2013.


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Course Code & Title: EE3251 Electric Circuit Analysis

Name of the Faculty member (s): Mr. A. Arun Kumar

Innovative Practice Description

❖ Unit / Topic: Unit III / Transient response of RLC circuits

- Course Outcome: CO 3
- Topic Learning Outcome: TLO 10
- Activity Chosen: Think pair share
- Justification:
 - ✓ 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.

• Time Allotted for the Activity: 10 minutes

• Details of the Implementation:

Think-Pair-Share innovative practice conducted for I year EEE students, after explained the concept of Transient response of RLC circuits. First, I asked the students to think about the comparison between Transient response of RLC circuits with step input and sine input for 2 minutes. Then I make them as a pair to discuss their neighbour's and asked the students to discuss about the same for 3 minutes. Finally, I asked the one of the team to explain the concept to whole class for further discussion. The students from group share their points and participated in the discussion for 10 minutes.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO3	2	2	1	1	1	-	-	-	1	-	-	1	1	-	-

(1 – Low 2 – Moderate 3 – High)

• PO / PSO mapped:

Innovative practice	PO9
	1
Justification for correlation	The students can Function effectively as an team

• **Images / Screenshot of the practice:**

Innovative Teaching Method Execution	
Transient response of RLC circuits – Think pair share	

• **Reflective Critique:**

❖ **Feedback of practice from students and other stakeholders:**

- ✓ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

❖ **Benefit of the practice:**

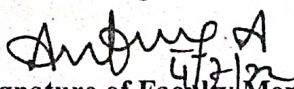
Think-pair-sharing forces all students to attempt an initial response to the question, which they can then clarify and expand as they collaborate. It also gives them a chance to validate their ideas in a small group before mentioning them to the large group, which may help shy students feel more confident participating.

❖ **Challenges faced in implementation:**

I planned the activity for 10 minutes. But in Class room it takes 20 minutes.

References:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", McGraw Hill publishers, 9th edition, New Delhi, 2020.
2. Charles K. Alexander, Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", Second Edition, McGraw Hill, 2019.
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Signature of Faculty Member

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Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)

Degree, Semester & Branch: II Semester B.E. EEE
Course Code & Title: EE3251 Electric Circuit Analysis
Name of the Faculty member (s): Mr. A. Arun Kumar

Innovative Practice Description

❖ Unit / Topic: Unit IV / Dot rule

- Course Outcome: CO 4
- Topic Learning Outcome: TLO 13
- Activity Chosen: Concept map

Concept mapping is a creative way to set goals, solve problems and design action plans. It quickly records ideas in a free-form way. When groups use concept mapping, the thoughts of each participant easily trigger ideas in others. This dynamic group interaction encourages breaking free of old patterns to uncover new and innovative approaches.

Time Allotted for the Activity: 05 minutes

• Details of the Implementation:

Concept mapping activities require students to actively engage in their learning, often by connecting their prior knowledge to new information. When creating a concept map, a student frequently interacts with a textbook, notes from class, an instructor, classmate, or study group.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	1	1	-	-	-	1	-	-	1	1	-	-

(1 – Low 2 – Moderate 3 – High)

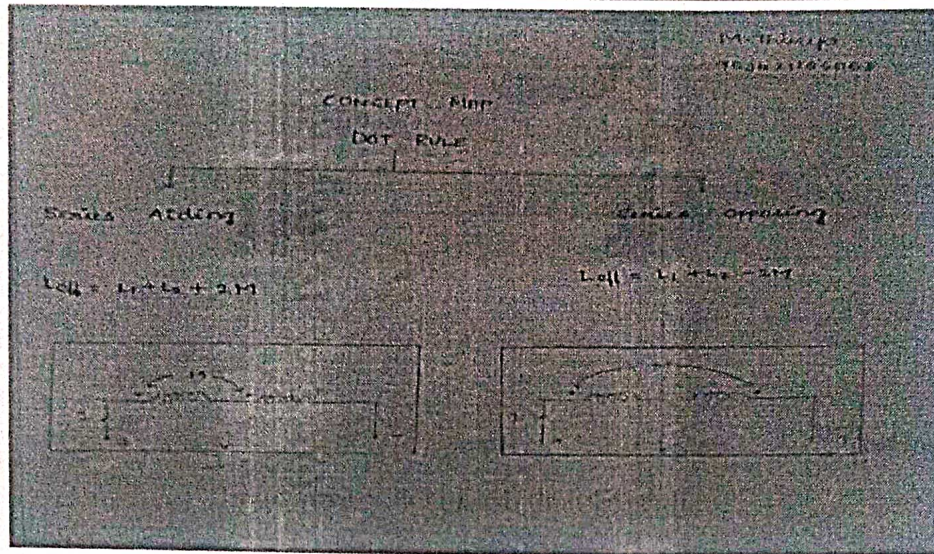
• PO / PSO mapped:

Innovative practice	PO9
	1
Justification for correlation	The students can Function effectively as an team

• Images / Screenshot of the practice:

Innovative Teaching Method Execution

Dot rule – Concept map



• Reflective Critique:

❖ Feedback of practice from students and other stakeholders:

Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

❖ Benefit of the practice:

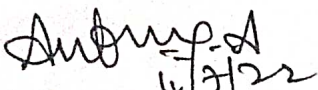
The benefits of concept maps are a great way for students to make notes on all of the information they receive. It helps the students to note down only the most important information using key words, and then make connections between facts and ideas visually – keeping all of your topic thoughts together on one sheet. It made key note making easier to students, as it reduces pages of notes into one single side of paper. Also mind map made slow learners to remember the information more quickly.

❖ Challenges faced in implementation:

I planned the activity for 05 minutes only. But in real scenario it takes 10 minutes to complete this activity.

References:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", McGraw Hill publishers, 9th edition, New Delhi, 2020.
2. Charles K. Alexander, Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", Second Edition, McGraw Hill, 2019.
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Department of Electrical and Electronics Engineering

Academic Year 2021 – 2022 (Even Semester)

Degree, Semester & Branch: II Semester B.E. EEE

Course Code & Title: EE3251 Electric Circuit Analysis

Name of the Faculty member (s): Mr. A. Arun Kumar

Innovative Practice Description

❖ **Unit / Topic:** Unit V / Three phase power measurement

• **Course Outcome:** CO 5

• **Topic Learning Outcome:** TLO 17

• **Justification:**

- ✓ The chosen topic will have the concepts related to design of various controllers for motor drive. Hence if the students are doing co-operative learning, then it is easier for them to understand the concepts. Sage and Scribe is one such cooperative learning activity.
- ✓ The expected outcome is like a review process of learned concepts / points, Sage and Scribe is suitable activity.

• **Time Allotted for the Activity:** 10 minutes

• **Details of the Implementation:**

- ✓ The two students sitting adjacent are made to do the activity together. One student (Sage) will explain the concept for a while and other student (Scribe) will answer for the questions.
- ✓ For the next question, the students will change their role. Likewise it will be repeated for all the questions.
- ✓ The students will share the same piece of paper for doing this activity.
- ✓ I clearly explained them that, since it is a cooperative activity both is responsible for the outcome.
- ✓ At the end of the lecture hour, the students are made to explain their answers to the class. I have given the correct answers for the questions with explanation.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	1	1	-	-	-	1	-	-	1	1	-	-

(1 – Low 2 – Moderate 3 – High)

• **PO / PSO mapped:**

Innovative practice	PO9
	1
Justification for correlation	The students can Function effectively as an team

• Images / Screenshot of the practice:

Innovative Teaching Method Execution

Three phase power measurement – Sage and Scribe

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Three Phase Power Measurement

Total active power $P = W_1 + W_2$ W_2 - Higher loading meter

Total reactive power $Q = W_3 - W_1$ W_1 - Lower loading meter

Power Factor $\cos \phi = \frac{P}{\sqrt{P^2 + Q^2}} = \frac{W_1 + W_2}{\sqrt{(W_1 + W_2)^2 + (W_3 - W_1)^2}}$

(maximum value is 1)

$\phi = \tan^{-1} \sqrt{3} \frac{W_3 - W_1}{W_2 + W_1}$

Power factor = $\cos \phi$

ii.) $\cos \phi = \frac{R}{\sqrt{R^2 + X^2}}$

$\cos \phi = \frac{P}{\sqrt{P^2 + Q^2}}$

In two wattmeter method $N_1 = W_2 \rightarrow$ Power factor is 1

$N_1 = -W_2 \rightarrow$ Power factor is 0

N_1 (or) W_2 any one is zero \rightarrow Power factor is 0.5

$N_1 = -W_2$ \rightarrow Reactive load

$W_1 = -W_2$ \rightarrow Active load

Power Factor: 0 0.5 1

Power Factor

• **Reflective Critique:**

❖ **Feedback of practice from students and other stakeholders:**

- ✓ The students have liked the session and they felt comfortable in doing this activity, since they are interacting with their neighbor. They did the work easily.
- ✓ They conveyed that more such activity will help them in understanding the concepts clearly and easily.

❖ **Benefit of the practice:**

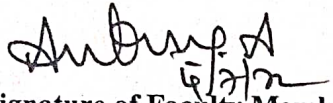
- ✓ The students have understood the concepts clearly and it has been evident from the answers they have written on the answer paper.
- ✓ The students have presented the answers to the class. It cleared any doubt in understanding the important points in the chosen topic.

❖ **Challenges faced in implementation:**

- ✓ In few groups, both the students were slow learners; hence they find it very difficult to answer the questions. I helped them in answering the questions by providing them with simple hints. In the next time, while doing this activity, I should properly pair the students

References:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", McGraw Hill publishers, 9th edition, New Delhi, 2020.
2. Charles K. Alexander, Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", Second Edition, McGraw Hill, 2019.
3. Allan H. Robbins, Wilhelm C. Miller, "Circuit Analysis Theory and Practice", Cengage Learning India, 2013.



Signature of Faculty Member

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Department of Mechanical Engineering
Academic Year 2021 – 2022 (Odd Semester)
Degree, Semester & Branch: VII Semester B.E. Mechanical Engineering
Course Code & Title: ME8099 & Robotics
Name of the Faculty member (s): Dr. J. Jabinth, AP/Mechanical
Innovative Practice Description

- **Unit / Topic: Unit IV / Simple Electronic Circuit design with Tinker CAD**
- **Course Outcome: CO2**
- **Date: 29.09.2021**
- **Topic Learning Outcome: TLO6**
- **Activity Chosen: Interactive learning using Tinker CAD**
- **Justification:** Students must have some basic understanding about the electronic components and electronic circuits.
- **Time Allotted for the Activity:** 45 minutes
- **Details of the Implementation:** Tinker CAD is an online simulation tool. The tool is used to design new electronic circuits. Other electronic components can also be used for designing electronic circuits.
- **CO – PO / PSO mapping:**

PO	PO1	PO5	PO12
CO5	3	3	3

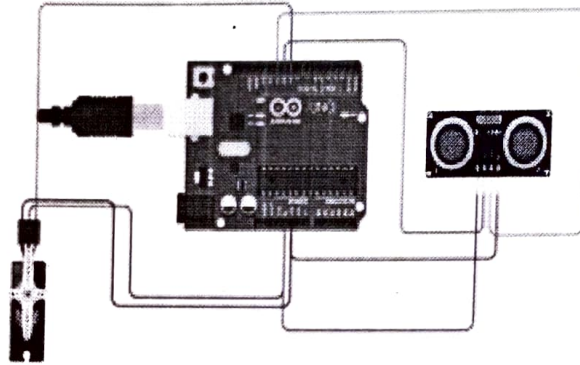
(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

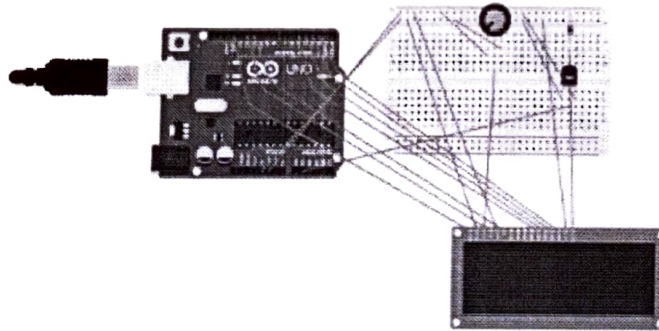
Innovative practice	PO1	PO5	PO12
	3	2	3
Justification for correlation	Students must have fundamental knowledge in the topics learnt in subject	Simulation using Tinker CAD	They can do the same simulation for many other robotic circuits.

Tinker CAD assignment submission by students:

1) Circuit of automatic sanitization using ultrasonic sensor and servo motor in tinker cad



2) A temperature scanner using TMP temperature sensor and display value on LCD when push button is pressed using tinker cad.



• Reflective Critique:

❖ *Feedback of practice from students and other stakeholders:*

Based on the feedback received from students, they told that it was easy for them to understand the working of electronic components.

- ##### ❖ *Benefit of the practice:* (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice) Students can replicate any type of circuit in TinkerCAD.

❖ **Challenges faced in implementation:**

- Students felt difficulty in understanding the operations of electronic components.

References:

- ❖ <https://youtu.be/JmUt9O4c2-c>
- ❖ Groover M.P., "Industrial Robotics -Technology Programming and Applications", McGraw Hill, 2001.

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29/9/21
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**Department of Mechanical Engineering
Academic Year 2021 – 2022 (Odd Semester)**

Degree, Semester & Branch: B.E, III & EEE

Course Code & Title: ME8792 & Power Plant Engineering

Name of the Faculty member (s): Mr.P.Pavithran, AP/Mech

Innovative Practice Description

- **Unit / Topic: Unit 2 / Diesel Power Plant**

Course Outcome: Describe the layout, construction and working of the components inside a Diesel, power plant – comparison of Otto and diesel cycle.

- **Topic Learning Outcome: TLO 5,6**

- **Activity Chosen: Theory to practice**

- **Justification:**

In theory subject, students were studied four stroke process of petrol and diesel engine in 2nd unit. Students see the cut section model and real time model of petrol engine and diesel engine. So students can easily relate suction , compression , power and exhaust stroke concept easily.

- **Time Allotted for the Activity: 12.10.2021 & 5th hour , 50 minutes**

- **Details of the Implementation:**

II EEE B - total 30 students visited RIT thermal lab – to see the working principle of petrol engine and diesel engine especially four stroke such as suction , compression, power and exhaust Stroke , Top dead center and bottom dead center. Students directly see cylinder and piston movement model. Know the difference between fuel injector and spark plug.

- **CO – PO / PSO mapping:**

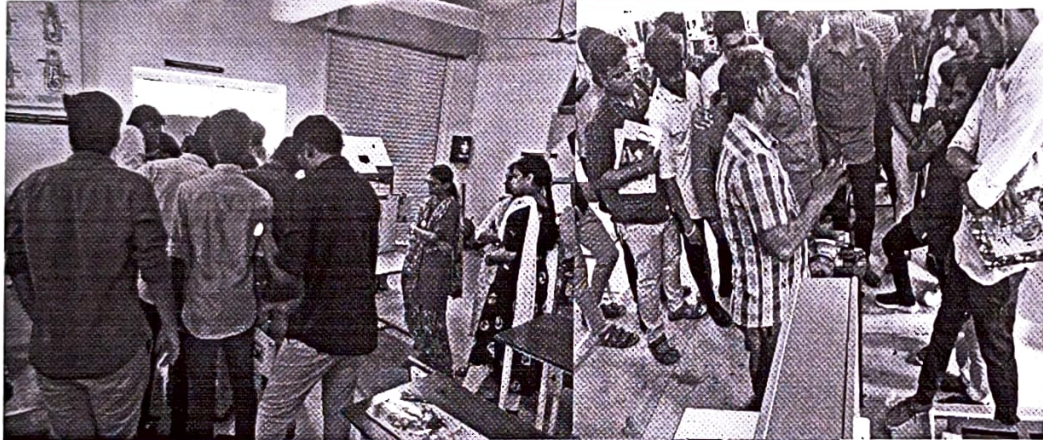
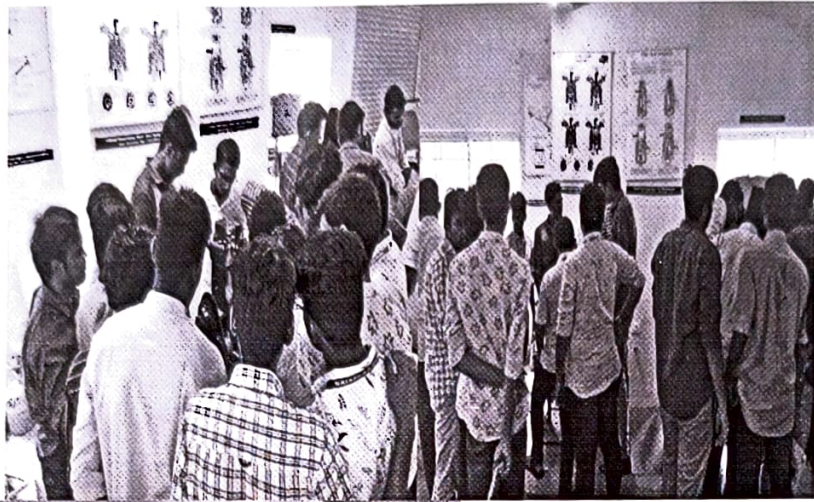
CO	PO 1	PO 2	PO 5	PSO 3
CO1	3	3	1	1

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

	PO 1	PO 2	PO 5	PSO 3
Innovative practice	Engineering Knowledge	Problem analysis	Modern tool usage	Students should be able to analyze thermodynamic process in Otto cycle
Justification for correlation	Students will be able to understand the Otto and dual cycle process s; thus, the PO is mapped at level 3	Identification of four stroke process in real time model thus, the PO is mapped at level 3	Imparting to write all assignments and tutorials in submitted in canvas thus, the PO is mapped at level 1	Various thermodynamic process in Otto cycle, diesel cycle process by live lab demonstration. Thus, the PSO is mapped at level 1

- **Images / Screenshot of the practice:**



- **Reflective Critique:**

- ❖ **Benefit of the practice:** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)


The students can be able to explain the working model of diesel power plant, Mainly for otto cycle, diesel cycle thermodynamic process – Isentropic expansion, Heat addition, Heat rejection, Isentropic compression, work done processes

- ❖ **Challenges faced in implementation:**

Students see the entire concept in 1 period of timetable. So they want one more session to see deeply understand the Process in another lab visit.

References:

- ❖ Nag. P.K., "Power Plant Engineering", Third Edition, Tata McGraw – Hill Publishing Company Ltd., 2008
- ❖ El-Wakil. M.M., "Power Plant Technology", Tata McGraw – Hill Publishing Company Ltd., 2010


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Department of Mechanical Engineering Academic Year 2021 – 2022 (Odd Semester)

Degree, Semester & Branch: III Semester B.E. EEE -'A' Section
Course Code & Title: ME8792 Power Plant Engineering
Name of the Faculty member (s): Mr.P.Pavithran, AP/Mech

Innovative Practice Description

- **Unit / Topic:** Unit III / Virtual Simulation of Nuclear Power Plant
- **Course Outcome:** Explain the layout, construction and working of the components inside nuclear power plants
- **Topic Learning Outcome:**
 - ✓ TLO 9 Explain the differences between Nuclear fission and fusion processes
 - ✓ TLO 10 Draw the layout of different types of Nuclear power plant
 - ✓ TLO 11 Illustrate the working of different types of Nuclear power plant
 - ✓ TLO 12 Enumerate safety measures for Nuclear power plants
- **Activity Chosen:** Virtual laboratory
- **Justification:**
 - ✓ Apply basic engineering concept in Nuclear power plant
 - ✓ Explain the working of Diesel and Gas turbine power plant
- **Time Allotted for the Activity:** 50 minutes

• Details of the Implementation:

Totally 30 students were actively participated for this online virtual simulation practice. A nuclear power plant (sometimes abbreviated as NPP) is a thermal power station in which the heat source is a nuclear reactor. As is typical of thermal power stations, heat is used to generate steam that drives a steam turbine connected to a generator that produces electricity. As of 2022, the International Atomic Energy Agency reported there were 439 nuclear power reactors in operation in 32 countries around the world.

Nuclear plants are very often used for base load since their operations, maintenance, and fuel costs are at the lower end of the spectrum of costs. However, building a nuclear power plant often spans five to ten years, which can accrue to significant financial costs, depending on how the initial investments are financed.

• CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206.3	3											

- **PO / PSO mapped:**

CO	PSO1	PSO2	PSO3
C206.3	1		

- Images / Screenshot of the practice:

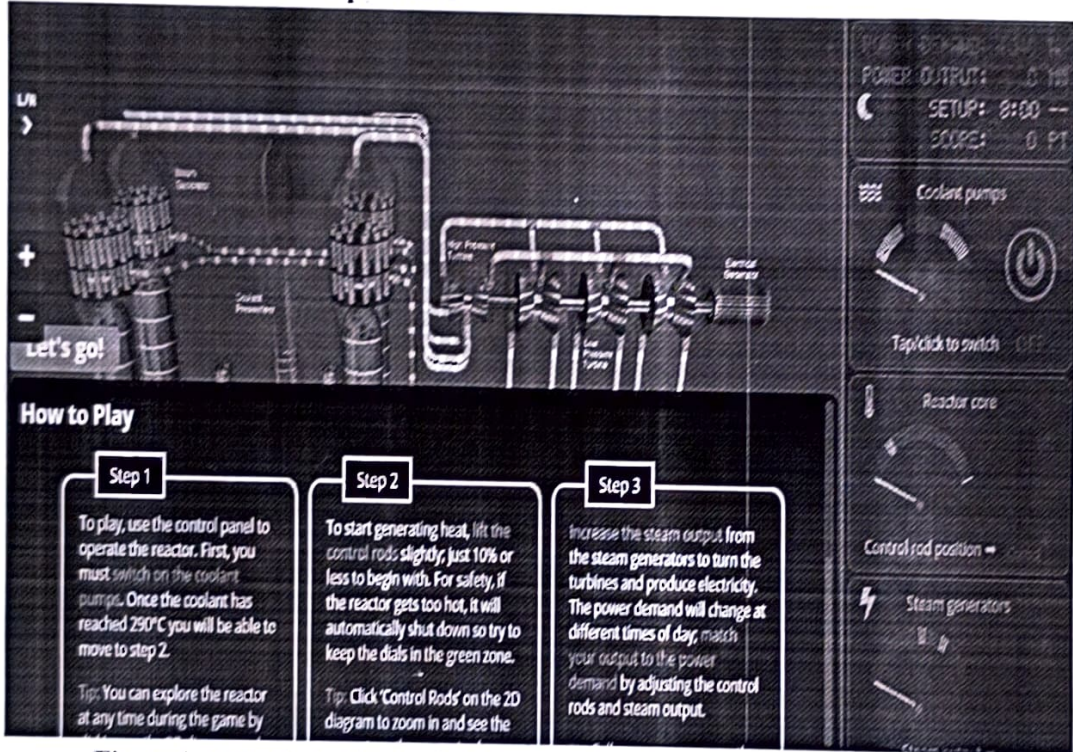


Figure1. "Illustrate the typical layout of nuclear power plant"

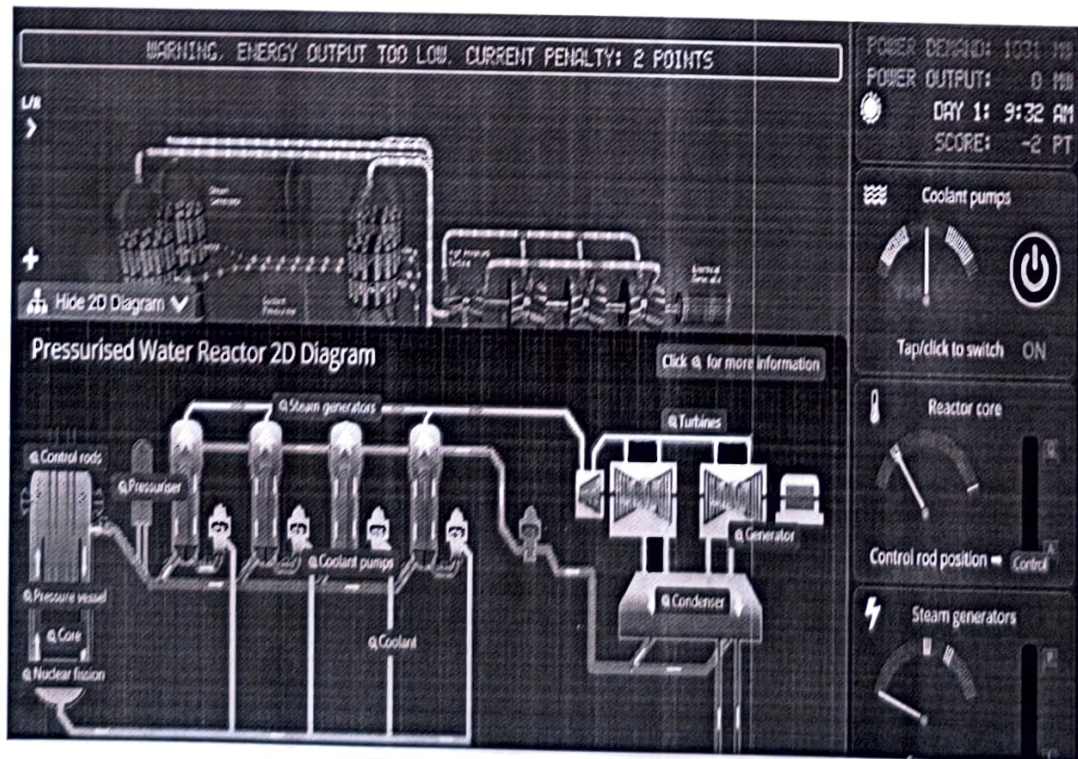


Figure2. "Illustrate the working of PWR"

- **Reflective Critique:**

- ❖ ***Feedback of practice from students and other stakeholders:***

The overall feedback from the students were really good and students felt that it is very easy understand the real time operation of nuclear power plant

- ❖ ***Benefit of the practice:***

After completing this hands on session in virtual laboratory, the students were able to understand the operation of nuclear power plant very clearly. This virtual simulation enables the students to better understanding of their real time operation of nuclear power plant by adjusting the control rods, fuel inputs and coolants used.

- ❖ ***Challenges faced in implementation:***

The warning and annunciation of fuel input provision can be included in simulation, for better clarity

References:

- ❖ <http://lotus.itservices.manchester.ac.uk:8080/>

 21/1/22

Signature of Faculty Member



HOD



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Department of Computer Science and Engineering

Academic Year 2021 – 2022 (Even Semester)

Degree, Semester & Branch: B.E.VI , Computer Science and Engineering

Course Code & Title: CS8075 - Data Warehousing And Data Mining

Name of the Faculty member (s): Mrs.M.Swarna Sudha

Innovative Practice Description

Unit 1-Topic: Data Warehouse Schemas for Decision Support,

Course Outcome: CO1

Topic Learning Outcome: TLO 1.3

Activity Chosen: Collaborative learning

Justification:

Drawing different schemas for problem and taking decision need deeper knowledge and different kinds of ideas. By collaborative learning Students will get in-depth knowledge of the particular topics and also making the students to accomplish tasks together is to help students learn the complexities of solving a problem and promote deeper learning through doing. It is also helpful to enhance their technical and non-technical knowledge as well as communication skills. It help the students to make the concepts more interesting and set them apart from the regular syllabus.

Time Allotted for the Activity: 25 minutes

Details of the Implementation:

- Allowed the students to make the group on own.
- Individual problem statements were given to the students prior to the start of the event for preparation purposes.
- All the students actively shared their views on the allotted topics.
- Finally, faculty member consolidated the information that was discussed in this activity.

CO – PO / PSO mapping:

CO	PO1	PO2	PO9	PO10	PSO3
CO1	2	3	3	3	3

(1 – Low 2 – Moderate 3 – High)

PO / PSO mapped:

Innovative practice	PO1	PO2	PO9	PO10	PSO3
	2	3	3	3	3
Justification for correlation	Apply the knowledge of DBMS schemas to solve problems.	Identify the solution to the problems and making decision support	Each one sharing the ideas individual land working in team to find the solution to design the schema	Communicating effectively by exchange the ideas and also make the students to presentation the ideas	Gaining the knowledge in Data analytics for providing the solution to Data Warehouse Schemas

Screenshot of the practice:



Figure 1 : Students are involved in group and working together to solve problems.

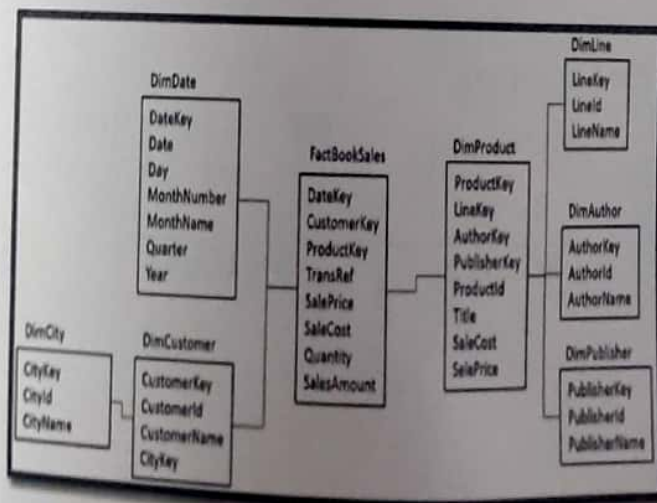
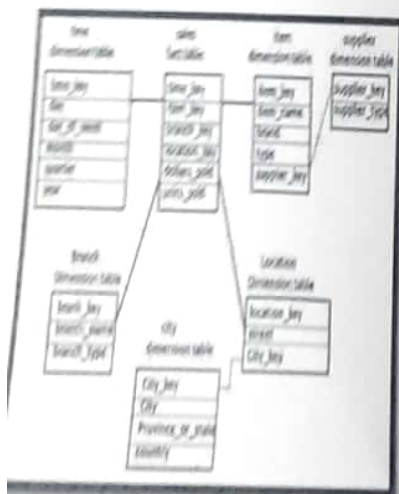


Figure 2 Sample of different schemas



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Department of Civil Engineering

Academic Year 2021 – 2022 (Odd Semester)

Degree, Semester & Branch: IV Semester B.E. Civil Engineering

Course Code & Title: CE8491 – Soil Mechanics

Name of the Faculty member (s): Mrs.D.Darling Helen Lydia

Innovative Practice Description

- **Unit / Topic:** Unit IV / Shear Strength
- **Course Outcome:** CO4
- **Topic Learning Outcome:** TLO19
- **Activity Chosen:** Laboratory Visit
- **Justification:**

Shear strength of a soil is indicative of its resistance to erosion. Specifically, it is defined as **the resistance to deformation by the action of tangential (shear) stress**. Soil shear strength is made up of cohesion between particles and resistance of particles sliding over each other due to friction or interlocking. Since it's a very important topic, students were taken to soil mechanics laboratory for deep understanding.

Time Allotted for the Activity: 40 Minutes

• Details of the Implementation:

The students were taken to soil laboratory and demo was shown for Direct sheat test, Triaxial test, unconfined compressive test and vane shear test.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO12
CO2	3	3	1	1	1

(1 – Low 2 – Moderate 3 – High)

• PO / PSO mapped:

Innovative practice	PO1	PO2	PO3	PO4	PO12
	3	3	1	1	1
Justification for correlation	Apply the knowledge of engineering fundamentals, to the solution of Shear strength of cohesive and cohesion less soils	Identify, formulate, Mohr-Coulomb failure problems reaching substantiated conclusions	Design solutions for Mohr-Coulomb failure to find shear strength parameters.	Use research-based knowledge and research methods including design of experiments used for shear strength, analysis	Recognize the need for shear strength of soil, and have the preparation and ability to engage in independent and life-long learning



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- Images / Screenshot of the practice:



Reflective Critique:

- ❖ **Feedback of practice from students and other stakeholders:**

Oral feedback was received from students and most of them conveyed that they understood the tests very well and they got the confident to do the test.

- ❖ **Benefit of the practice:**

This practice certainly would develop strong basic knowledge. Through this some of the students answered the questions related to this topic in a good way.

References:

- ❖ <https://theconstructor.org/geotechnical/shearing-strength-of-soils-tests/2518/>

Signature of Faculty Member

HOD/Incharge

Department of Civil Engineering
Academic Year 2021– 2022 (Even Semester)

Degree, Semester & Branch: V semester B.E Civil Engineering

Course Code & Title: CE8602 & Structural Analysis II

Name of the Faculty member (s): Dr.M. Indhumathi

Innovative Practice Description

- **Unit / Topic: Unit I to V / Analysis of Structure using STAAD pro**

- **Course Outcome: CO1 to CO6**

- **Topic Learning Outcome: TLO1 to TLO18**

- **Activity Chosen: Simulation Tool**

- **Justification:**

Structural Analysis subject is mainly involves the process of analysis of structures in a various methods manually. Whether the results may justified using any softwares. Here STADD pro is used to analyse the structural elements and further the results are compared with manual calculation.

- **Time Allotted for the Activity: 50 minutes**

- **Details of the Implementation:**

1. After Completing all the units theoretically, individual elements are analyzed in a structure step by step then the whole structure has been analysed (Upto two-story framed structures)
2. I asked all students to take any residential plan and practice with STAAD pro to analyze the structure completely.

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO4	PO5	PSO2	PSO4
CO1	3	3	2	1	3	2	3
CO2	3	3	2	1	3	2	3
CO3	3	3	2	1	3	2	3
CO4	3	3	2	1	3	2	3
CO5	3	3	2	1	3	2	3
CO6	3	3	2	1	3	2	3

(1 – Low

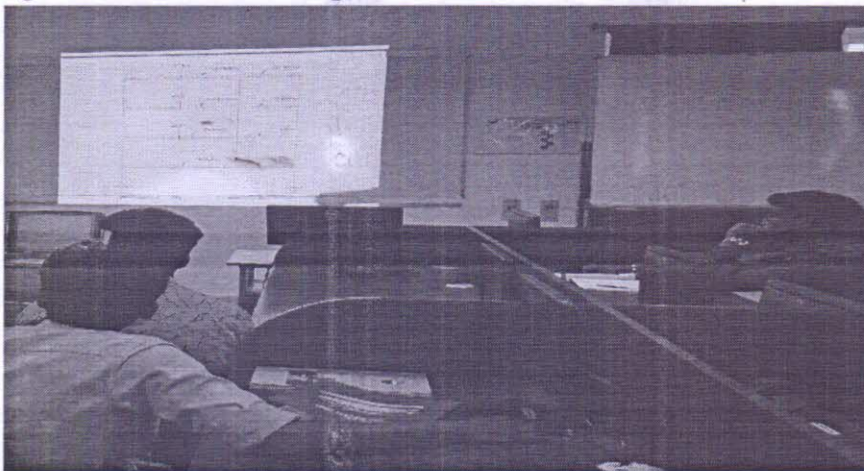
2 – Moderate

3 – High)

• **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO4	PO5	PSO2	PSO4
Justification for correlation	Helps to applying the knowledge of mathematics, engineering fundamentals and an engineering specialization to the solution of complex engineering problems	Used to Identify, formulate, and analyze complex engineering problems	Giving design solutions for complex engineering problems and also it meets the public safety	Used to provide valid conclusions,utilising the design of experiments and analysis		Utilising the modern tool like STADD pro,Ansys etc..	Enhancing the skill to act as design consultant in construction industry

• **Images / Screenshot of the practice:**



• **Reflective Critique:**

❖ **Feedback of practice from students and other stakeholders:**

The students felt very easy to analyse the structure using STAAD pro tool than manually.they said ot is very useful tool to become a structural Engineer

❖ **Benefit of the practice:** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

- i. Simulation tool is an effective way of involving all students in class simultaneously.
- ii. It prompts students to reflect on the day's lesson and provides the instructor with useful feedback.

❖ **Challenges faced in implementation:**

Initially, I have planned the activity for 50 minutes but students have taken more than 50 minutes to understand well.

References:

1. https://www.youtube.com/watch?v=3XxHHzIGC_M


Signature of Faculty Member


HOD



**Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)**

Degree, Semester & Branch: IV Semester B.E. EEE A

Course Code & Title: EE8402 Transmission and Distribution

Name of the Faculty member: Dr.S.Kannan

Innovative Practice Description

- **Unit / Topic:** Unit I / Types of Transmission line and Distribution line conductors
- **Course Outcome:** CO1
- **Topic Learning Outcome:** TLO2
- **Activity Chosen:** One Minute Paper

- **Justification:**

The chosen topic - types of conductors have 3 types in transmission and distribution conductors. Since in each type student going to calculate the inductance and capacitance value. After teaching the concept, I thought of conducting this activity for enabling the students to give the difference between each type of conductors which enhance their learning level and as a teacher I can judge the understanding level of the students.

Time Allotted for the Activity: 10 Minutes

- **Details of the Implementation:**

After completing the topic, I gave 5 minutes for the students to think about the topic without writing anything.

Total Strength: 30

Reporter : Myself

At the end of the class

- ✓ I asked the students to think about various types of conductors in transmission and distribution lines for 5 minutes.
- ✓ I told them to write as much as they remember for 3 minutes.
- ✓ Finally, I collected the papers from the students.(2 minutes)



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• CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO8	PO9	PO10	PO12	PSO1
CO1	3	2	2	1	1	1	2	2

• PO / PSO mapped:

Innovative practice	PO10
	1
Justification for correlation	Due to this activity, student's written communication will be enhanced. So it is slightly correlated.

• Screenshot of the activity:

Types of standard conductor:-

- AAC- All Aluminium conductor.
- AAAC- All Aluminium with alloy conductor.
- ACSR- Aluminium conductor with steel Reinforcement.
- ACAR- Aluminium conductor with Alloy.

R-GOKUL
953620105312
EEE-A II Year.

Types of conductors :

→ Stranded conductors :

This conductor has two or more conductors join together to pass high current.

- * All Aluminium conductors (AAC)
- * All Aluminium and Alloy conductors (AAAC)

* All Aluminium with Alloy Reinforcement (AAR)

* All Aluminium with Steel Reinforcement (ACSR).

→ Bundle conductors :

This consists of more than two sub conductors connected parallelly which is used to reduce voltage drop in the conductor.

P. Kalyanidevi
953620105009
II - EEE - A



Reflective Critique:

❖ *Feedback of practice from students and other stakeholders:*

Students felt that writing about the given topic make them understand it well and able to recollect immediately.

❖ *Benefit of the practice:*

1. All the students were able to write the given topic.
2. After conducting the activity, I came to know that students understood the topic and they were able to explain it.

❖ *Challenges faced in implementation:*

1. Time utilization for conducting the activity
2. Some students could not be able to recollect and write immediately.

References:

- ✓ D.P.Kothari, I.J. Nagarath, 'Power System Engineering', Mc Graw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
- ✓ V.K.Mehta, Rohit Mehta, 'Principles of power system', S. Chand & Company Ltd, New Delhi, 2013
- ✓ <https://oncourseworkshop.com/self-awareness/one-minute-paper/>

S. K. C. 31/03/22
Signature of Faculty Member

S. K. C. 31/03/22
HOD



**Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)**

Degree, Semester & Branch: IV Semester B.E. EEE A

Course Code & Title: EE8402 Transmission and Distribution

Name of the Faculty member: Dr.S.Kannan

Innovative Practice Description

- **Unit / Topic:** Unit II / Corona
- **Course Outcome:** CO2
- **Topic Learning Outcome:** TLO5
- **Activity Chosen:** Think Pair Share

- **Justification:**

The chosen topic – corona provides safety to the transmission lines and reduces flash over. After teaching the concept, I thought of conducting this activity for making the students to provide knowledge about corona and its effects which enhance the learning level and as a teacher I can judge the understanding level of the students.

Time Allotted for the Activity: 10 Minutes

- **Details of the Implementation:**

After completing the topic, the students will be paired with their neighbors, 4 students as a group.

Total Strength is 31, Number of Pairs – 8

Photographer: Myself

Reporter: Myself

At the end the Class (Last 10 minutes)

- I asked the students to **think** about corona, factors affecting corona and its loss for 2 minutes.
- Then I told them to **Pair** with their neighbors and discuss about the concept of corona in transmission line for another 2 minutes.
- Finally, I selected 1 Pair from each column randomly and ask them to **share** about corona and its advantages. (6 minutes)
- Finally, I summarized the points again about corona in transmission line.



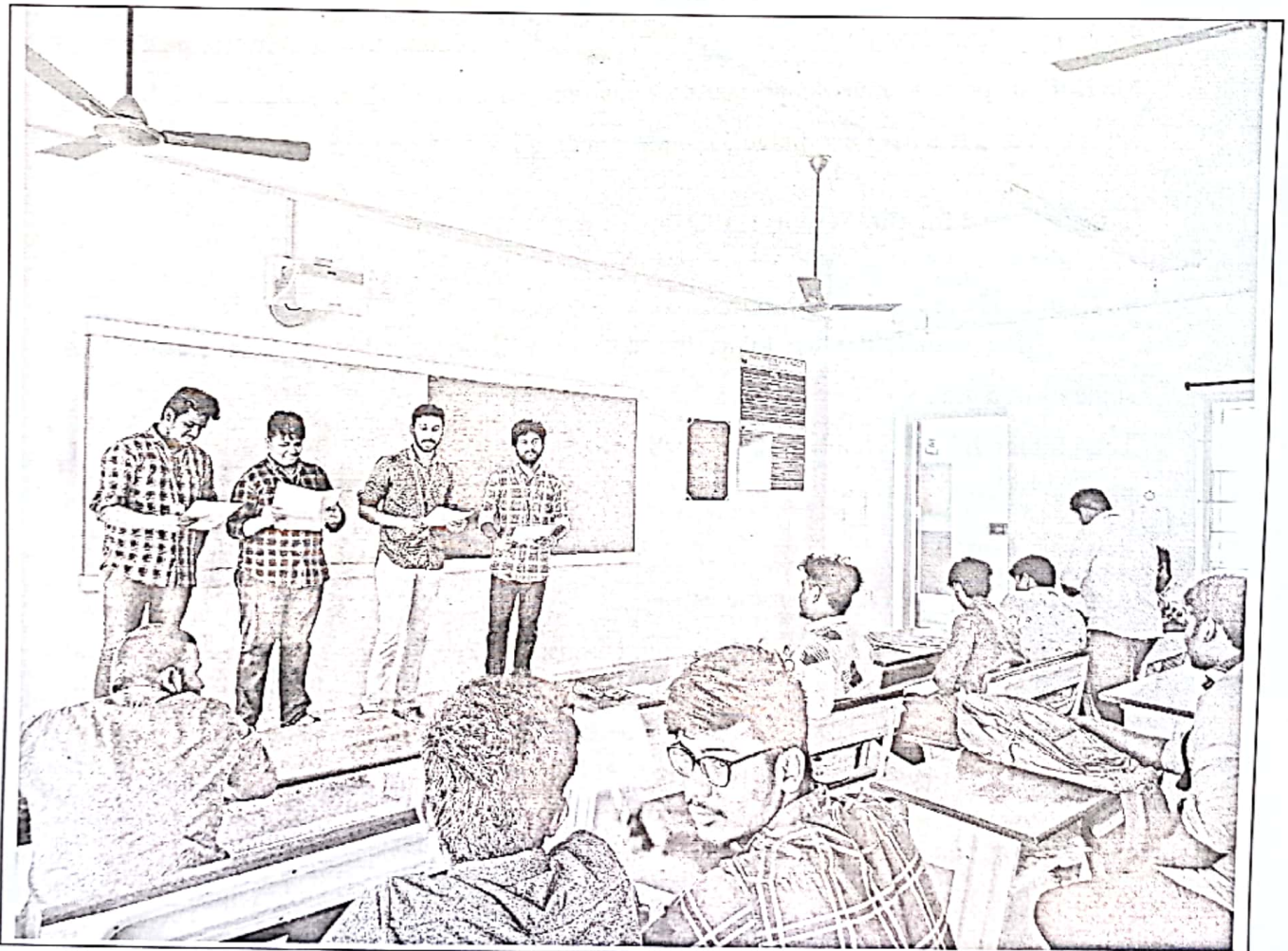
- CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO8	PO9	PO10	PO12	PSO1
CO1	3	3	3	1	1	1	2	2

- PO / PSO mapped:

Innovative practice	PO9
	1
Justification for correlation	Due to this activity, student's team work is getting enhanced. So it is slightly correlated.

- Screenshot of the activity:





Reflective Critique:

❖ *Feedback of practice from students and other stakeholders:*

Students felt that discussing with the team members and sharing the concept with everyone make them understand it well and enhanced their knowledge.

❖ *Benefit of the practice:*

1. All the students were able to share the topic given in an effective way.
2. Students understood the concept which was reflected from their answers during sharing session.

❖ *Challenges faced in implementation:*

1. Time utilization for conducting the activity
2. Slow learners were not able to recollect and present some points during sharing session.

References:

- ✓ D.P.Kothari, I.J. Nagarath, 'Power System Engineering', Mc Graw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
- ✓ V.K.Mehta, Rohit Mehta, 'Principles of power system', S. Chand & Company Ltd, New Delhi, 2013
- ✓ <https://www.readingrockets.org/strategies/think-pair-share>

S.Kee 20/04/22
Signature of Faculty Member
[S.KANNAN]

S.Kee 20/04/22
HOD
[S.KANNAN]



**Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)**

Degree, Semester & Branch: IV Semester B.E. EEE A

Course Code & Title: EE8402 Transmission and Distribution

Name of the Faculty member : Dr.S.Kannan

Innovative Practice Description

- **Unit / Topic:** Unit III / Types of Towers
- **Course Outcome:** CO3
- **Topic Learning Outcome:** TLO6
- **Activity Chosen:** Visible Quiz

- **Justification:**

The chosen topic - types of towers have 4 types of line supports for overhead line conductors. Since each type has its own definition and limitation, after teaching the concept, I thought of conducting this activity for enabling the students to differentiate between each types of line supports which enhance their learning level and as a teacher I can judge the understanding level of the students.

Time Allotted for the Activity: 10 Minutes

- **Details of the Implementation:**

After completing the topic, I gave 3 minutes for the students to think about the topic without writing anything.

Total Strength: 31

Photographer: Myself

At the end of the class

- ✓ I asked the students to think about various types of towers for 3 minutes.
- ✓ I asked them questions with multiple choices (A, B, C and D) by providing set of large cards imprinted with one of the four letters 5 minutes.
- ✓ Finally, I summarized the questions and answers to the students and cleared their doubts.(2 minutes)

- **CO – PO / PSO mapping:**

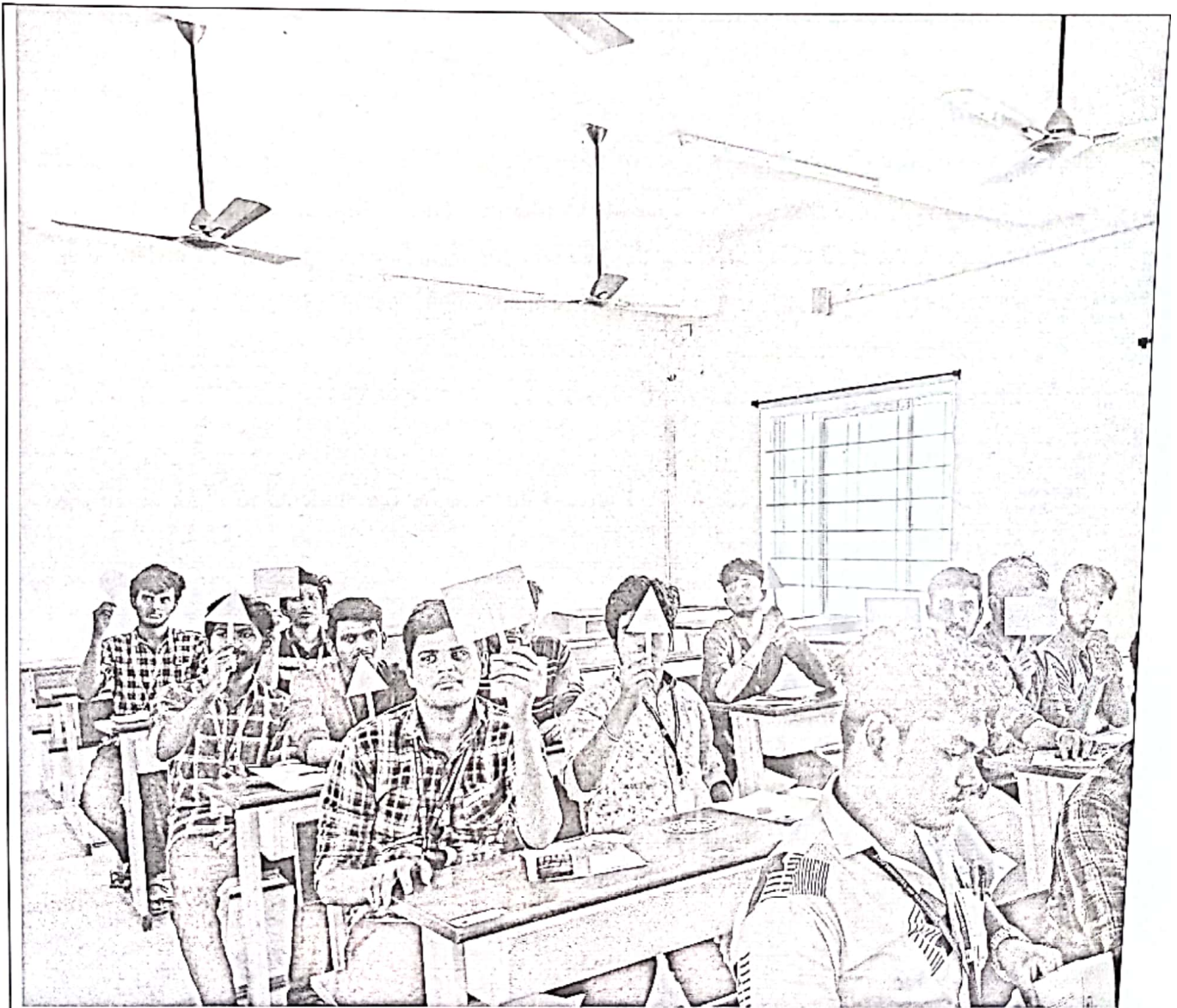
CO	PO1	PO2	PO3	PO4	PO8	PO9	PO10	PO12	PSO1
CO3	3	3	3	1	1	1	1	2	2



- PO / PSO mapped:

Innovative practice	PO7
	1
Justification for correlation	Due to this activity, students will understand the impact of professional engineering solution for environment. So it is slightly correlated.

- Screenshot of the activity:





Reflective Critique:

❖ *Feedback of practice from students and other stakeholders:*

Students felt that answering the options about the topic by using cards is understandable & interesting and able to recollect it.

❖ *Benefit of the practice:*

1. All the students were able to answer the options given for the question.
2. After conducting the activity, I came to know that students understood the topic and they were able to explain it.

❖ *Challenges faced in implementation:*

1. Time utilization for conducting the activity
2. Some students could not be able to recollect and answer immediately.

References:

- ✓ D.P.Kothari, I.J. Nagarath, 'Power System Engineering', Mc Graw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
- ✓ V.K.Mehta, Rohit Mehta, 'Principles of power system', S. Chand & Company Ltd, New Delhi, 2013
- ✓ https://www.ideaedu.org/Portals/0/Uploads/Documents/IDEA%20Papers/IDEA%20Papers/PaperIDEA_53.pdf

S.K. 12/05/22
Signature of Faculty Member
[S. KANNAN]

S.K. 12/05/22
HOD
[S. KANNAN]



**Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)**

Degree, Semester & Branch: IV Semester B.E. EEE A

Course Code & Title: EE8402 Transmission and Distribution

Name of the Faculty member: Dr.S.Kannan

Innovative Practice Description

- **Unit / Topic:** Unit IV / Construction of single core and three core cables
- **Course Outcome:** CO4
- **Topic Learning Outcome:** TLO9
- **Activity Chosen:** Demonstration
- **Justification:**

After teaching the concept, I thought of conducting this activity for making the students to give exposure about the constructional features and different insulating materials used in UG cables which enhance the learning level and as a teacher I can judge the understanding level of the students.

Time Allotted for the Activity: 20 Minutes

- **Details of the Implementation:**

After completing the topic, three minutes is given to the students to think about the topic without writing anything.

Total Strength: 31

Photographer: one student - Mr.B. Nikil Dev

At the end of the class

- ✓ I asked the students to think about constructional features and different types of Cables for 3 minutes.
- ✓ Then I told them to Pair with their neighbour and discuss about the different types of Cables and constructional features for another 3 minutes.
- ✓ Then, I shown the demo Cables for each student and explained. (10 minutes)
- ✓ Finally I asked some students to explain about the types and constructional features. (4 minutes)



- CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO8	PO9	PO10	PO12	PSO1
CO1	3	3	2	1	1	1	2	2

- PO / PSO mapped:

Innovative practice	PO7
	1
Justification for correlation	Due to this activity, students will understand the impact of professional engineering solution for environment. So it is slightly correlated.

- Screenshot of the activity:



Reflective Critique:

- ❖ *Feedback of practice from students and other stakeholders:*

Students were interested involving in the activity and requested to conduct more such activities in future.

- ❖ *Benefit of the practice:*

- ✓ The assessment of effectiveness of the activity was good in a way that while asking questions, most of the students answered and shared many points.



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- ✓ After conducting the activity, I understood that the students could be able to recollect the points about construction of cables and able to differentiate single core and three core cables.

❖ **Challenges faced in implementation:**

- ✓ Time is not enough for this activity, so will allot more time in future.

References:

- ❖ D.P.Kothari, I.J. Nagarath, 'Power System Engineering', Mc Graw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
- ❖ V.K.Mehta, Rohit Mehta, 'Principles of power system', S. Chand & Company Ltd, New Delhi, 2013
- ❖ <https://blog.teachmint.com/demonstration-method-an-introduction/#:~:text=In%20the%20demonstration%20method%20of,knowledge%2C%20thereby%20further%20enhancing%20it.>

S. K. C. 24/05/22

Signature of Faculty Member

S. K. C. 24/05/22

HOD



**Department of Electrical and Electronics Engineering
Academic Year 2021 – 2022 (Even Semester)**

Degree, Semester & Branch: IV Semester B.E. EEE A

Course Code & Title: EE8402 Transmission and Distribution

Name of the Faculty member: Dr.S.Kannan

Innovative Practice Description

- **Unit / Topic:** Unit V / Substation Layout and Methods of Grounding
- **Course Outcome:** CO5
- **Topic Learning Outcome:** TLO15
- **Activity Chosen:** Field Visit
- **Justification:**

The topic Substation Layout and Methods of Grounding has different types and used for various applications. After completing the topic, I took the students for field visit to enable the students to acquire more knowledge in observing the layout and grounding techniques.

Time Allotted for the Activity: 45 Minutes

- **Details of the Implementation:**

After completing the topic, I took the students to the RIT – Power House and shown them how the grounding is done and explained about the input power and power distribution inside the college.

Total Strength: 31

Photographer: one student - Mr. R. Chandru

At the end of the visit

- ✓ I asked some students to measure the earth resistance. Few students voluntarily measured the resistance.
- ✓ I request all the students to discuss among themselves for 5 minutes.
- ✓ Finally, I asked questions to students about the substation layout and methods of grounding and the students answered well which shows the understanding of the topic through this field visit.(5 minutes)



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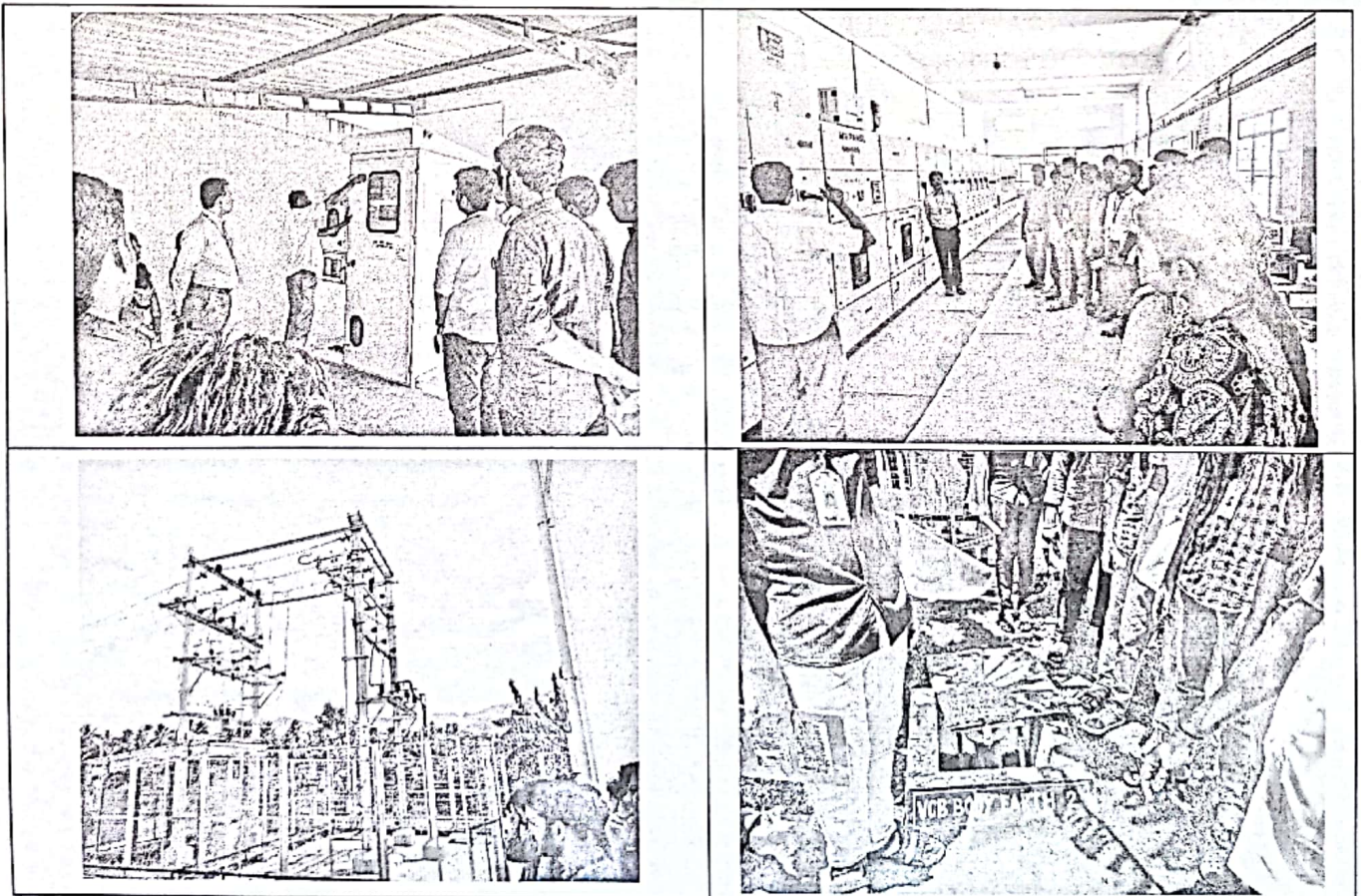
- CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO6	PO8	PO9	PO10	PO12	PSO1
CO1	3	3	3	2	1	1	1	2	2

- PO / PSO mapped:

Innovative practice	PO7
	1
Justification for correlation	Due to this activity, students will understand the impact of professional engineering solution for environment. So it is slightly correlated.

- Screenshot of the activity:





Reflective Critique:

❖ *Feedback of practice from students and other stakeholders:*

Students were interested in attending field visit and requested to conduct more such activities in future.

❖ *Benefit of the practice:*

- ✓ The assessment of effectiveness of the activity was good in a way that while asking questions, most of the students answered and shared many points.
- ✓ After conducting the activity, I understood that the students could be able to recollect the points about substation and grounding methods.

❖ *Challenges faced in implementation:*

- ✓ Time is not enough for this activity, so will allot more time in future.

References:

- ❖ D.P.Kothari, I.J. Nagarath, 'Power System Engineering', Mc Graw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
- ❖ V.K.Mehta, Rohit Mehta, 'Principles of power system', S. Chand & Company Ltd, New Delhi, 2013

S.KCC 08/06/22
Signature of Faculty Member
[S. KANNAN]

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[S. KANNAN]



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Department of Electronics and Communication Engineering

Academic Year 2021 – 2022 (Odd Semester)

Degree, Semester & Branch: VII Semester B.E. ECE B

Course Code & Title: EC8702 Adhoc and Wireless Sensor Networks

Name of the Faculty member (s): Dr.K.Ragavan

Innovative Practice Description

- **Unit / Topic:** Unit IV / Sensor Node Hardware

- **Course Outcome:** CO5

- **Topic Learning Outcome:** TLO13

- **Activity Chosen:** Three Step Interview

- **Justification:**

The three-step interview learning strategy incorporates a blend of role-playing and discussion to facilitate student learning. Collaborative learning encourages the development of skills including active listening, note-taking, and knowledge sharing. The strategy comprises of Q&A sessions and interviews, enhancing student interest and engagement, and in turn making learning more fun and enjoyable in the classroom.

- **Time Allotted for the Activity:** 50 minutes

- **Details of the Implementation:**

For the three-step interview, students are grouped into small groups of three. Each member in the group assumes the role of interviewer, interviewee and reporter/note-taker; and each student should get an opportunity to play each role. To help explain the process, each student will be named as A, B and C.

The interviewing process is conducted in three steps:

Steps	Interviewer	Interviewee	Reporter
Step 1	Student A	Student B	Student C
Step 2	Student C	Student A	Student B
Step 3	Student B	Student C	Student A

After the three-step interview process is completed, the students are given extra time to share and consolidate the information.

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO4	PO5	PO9	PO10	PO12	PSO1	PSO2	PSO3
CO4	2	1	2	2	2	1	1	1	3	3	1

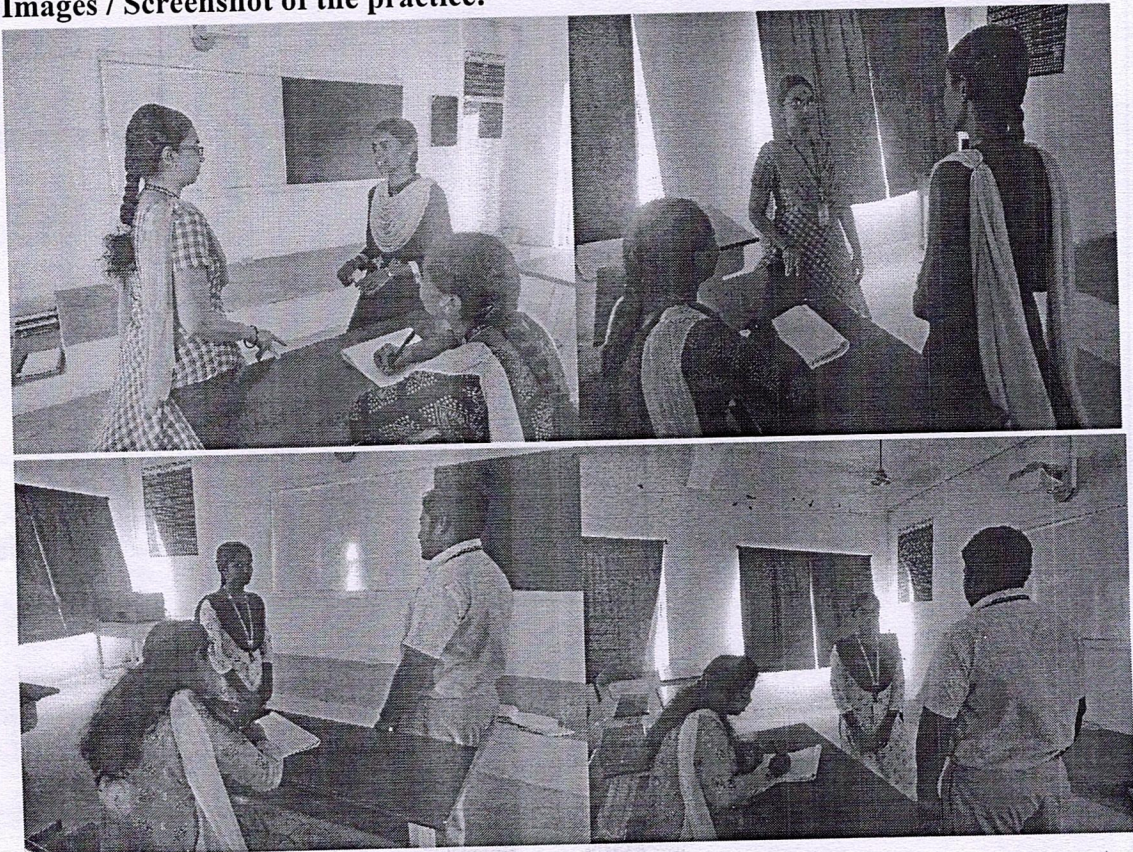
(1 – Low 2 – Moderate 3 – High)

• PO / PSO mapped:

Innovative practice	PO1	PO2	PO3	PO4	PO5	PO9	PO10	PO12
	2	1	2	2	2	1	1	1
Justification for correlation	Communication networks and Wireless networks fundamentals are applied	Various simulators are analyzed	Berkeley mote sensor hardware component are analyzed	Selection of appropriate hardware and software tools are required to design a sensor node	Node level software's are used for sensor node hardware	Needs individual and team work	effective communication is required	Sensor nodes are used in day-to-day life and it is used to learn new technology

Innovative practice	PSO1	PSO2	PSO3
	3	3	1
Justification for correlation	possible node level simulators can be analyzed to solve the existing sensor network programming challenges	Berkeley mote sensor node hardware, node level softwares can be applied in embedded systems	Sensor network platforms and tools are used for communication systems

• Images / Screenshot of the practice:



- **Reflective Critique:**

- ❖ **Feedback of practice from students and other stakeholders:**

- Most of the students enjoyed the activity because this is the first time experience
- It helps them to improve the communication skills
- It helps them familiarized with the method of interviewing

- ❖ **Benefit of the practice:**

The three-step interview learning strategy is beneficial to student learning in the following ways:

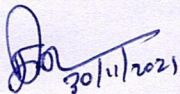
- It encourages students to think about the information they have been taught
- It expands their ability to question, think and generate answers
- It provides each student with the opportunity to voice their opinions, and promotes equal participation
- It promotes student accountability

- ❖ **Challenges faced in implementation:**

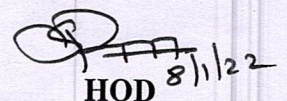
- Time management – Since few group of students made lengthy interview, it was difficult to complete within the time.
- few students struggled to answer the questions due to lack of preparation.

References:

- ❖ Holger Karl , Andreas willig, - Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006.
- ❖ Feng Zhao, Leonidas Guibas, —Wireless Sensor Networks: an information processing approach, Elsevier publication, 2004
- ❖ I.F. Akyildiz, W. Su, Sankarasubramaniam, E. Cayirci, —Wireless sensor networks: a survey, computer networks, Elsevier, 2002, 394 - 422.
- ❖ Ruiz-Sandoval, Manuel; Nagayama, Tomonori; Spencer, B. F. (2006). Sensor Development Using Berkeley Mote Platform. Journal of Earthquake Engineering, 10(2), 289–309.


30/11/2021

Signature of Faculty Member


HOD 8/11/22



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Accredited by NAAC & An ISO 9001:2015 Certified Institution
NBA Accredited UG Programs: CSE, EEE, ECE and MECH

Department of Electronics and Communication Engineering

Academic Year 2021 – 2022 (Odd Semester)

Degree, Semester & Branch: VII Semester B.E. ECE B

Course Code & Title: EC8702 Adhoc and Wireless Sensor Networks

Name of the Faculty member (s): Dr.K.Ragavan

Innovative Practice Description

- **Unit / Topic:** Unit IV / Network Security attacks
- **Course Outcome:** CO4
- **Topic Learning Outcome:** TLO11
- **Activity Chosen:** Flipped Classroom
- **Justification:**

The flipped class topic was chosen because there are several attacks in each layer of Wireless Sensor Networks. The details of various network security attacks are provided in Unit 4. Since the students are exposed to the basics of attacks, I decided to tell a flipped class on 'Network Security Attacks'. Only a few attacks at various layers were mentioned in their prescribed text book, despite the fact that there are many attacks in wireless sensor networks. Students have the opportunity to search and explore more information related to specific attacks if this flipped class is used in addition to the learning materials provided by the faculty member. As a result, this activity will cover various attacks in wireless sensor networks in two periods, which is not feasible in traditional teaching. This is why this topic was chosen for the flipped class activity.

- **Time Allotted for the Activity:** 2 periods
- **Details of the Implementation:**
 - The students were informed about the flipped class activity atleast 10 days before the implementation of the activity
 - The materials like PPT, documents, videos related to the topic will be sent through mail to all the students
 - The grouping of students will also be done well in advance and each group is allotted with attacks in any one layer (10 days before implementation)
 - As a reminder, a notification regarding the activity will be informed every two days
 - The students must prepare a 10-minute presentation including the topic learned, 3 minutes for questions and answers, and a description of each member's participation.
 - The inside-class activity will be a presentation that will last two sessions. In which each group must present their selected topic to the rest of the class, who will be listening.

- Layerwise attacks in network security will be discussed with the entire class, and handouts on the issue will be distributed among the group members.
- The major goal of the flipped class activity is for each group to study attacks in one layer, and for the other members to learn about all of the attacks in various layers through presentations.

• **CO – PO / PSO mapping:**

CO	PO1	PO2	PO4	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO4	3	2	2	1	1	1	3	2	1

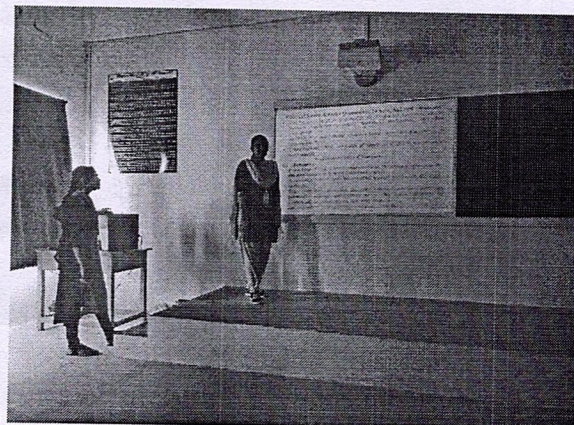
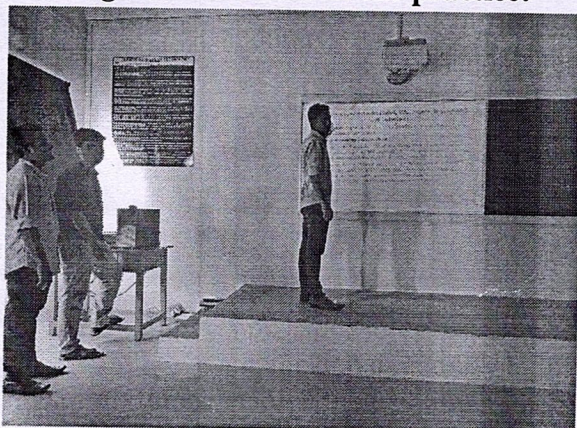
(1 – Low 2 – Moderate 3 – High)

• **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO4	PO8	PO9	PO10
	3	2	2	1	1	1
Justification for correlation	Communication networks and Wireless networks fundamentals are applied	Various security attacks are identified and analyzed	possible solutions for various attacks to solve complex engineering problems in WSN	Group activity which requires inter-personal ethics	Needs individual and team work	effective communication is required

Innovative practice	PSO1	PSO2	PSO3
	3	2	1
Justification for correlation	possible solutions can be analyzed to solve the existing network security attacks	key distribution and management schemes can be applied in embedded systems for network security attacks	Analyze network security attacks in sensor networks for communication systems

• **Images / Screenshot of the practice:**



❖ **Reflective Critique:**

❖ **Feedback of practice from students and other stakeholders:**

- The students got experience learning a topic from outside class and giving a presentation in class.
- They found it totally useful to learn about the real-time attacks on wireless sensor networks because the topic is about various network security attacks.
- The activity was designed for groups, and it included interactions and conversations that allowed participants to learn more.

❖ **Benefit of the practice:**

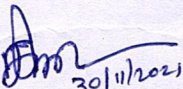
- Because of the group activity, there is more interaction among the peer group members.
- The students felt a new experience and it helped to know how to make good presentation and avoid stage fear.
- The students were able to focus on the main topics due to a guideline for using the learning materials.

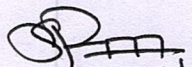
❖ **Challenges faced in implementation:**

- Time management – Since few group of students made lengthy presentation, it was difficult to complete in 10 minutes.
- Few students had stage fear while presentation.
- In Q& A module – few students struggled to answer the questions and ask question to the peers.

References:

- ❖ Holger Karl , Andreas willig, - Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006.
- ❖ Feng Zhao, Leonidas Guibas, —Wireless Sensor Networks: an information processing approach, Elsevier publication, 2004
- ❖ I.F. Akyildiz, W. Su, Sankarasubramaniam, E. Cayirci, —Wireless sensor networks: a survey, computer networks, Elsevier, 2002, 394 - 422.


Signature of Faculty Member

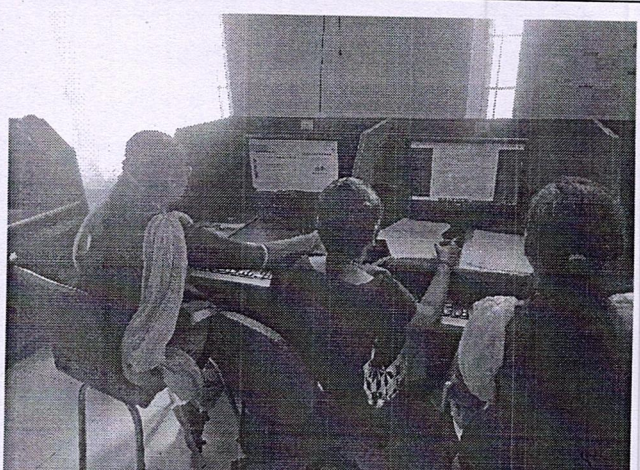
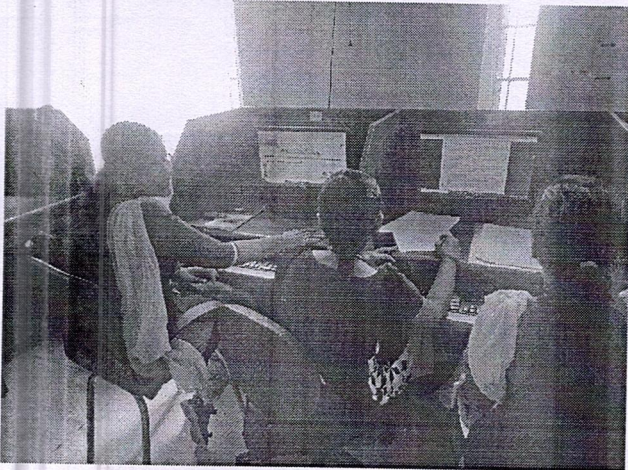

HOD 3/1/22

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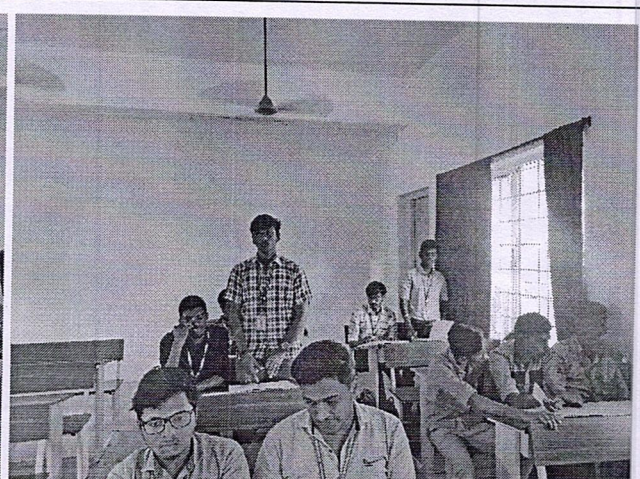
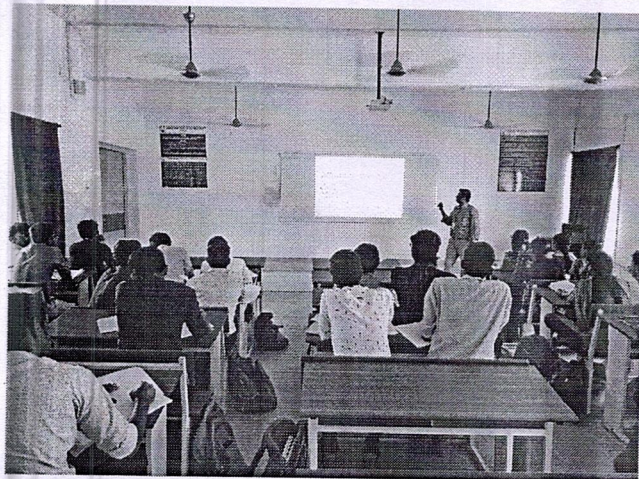
INNOVATIVE TEACHING METHOD

Degree, Semester & Branch: VII Semester B.E. ECE B
Course Code & Title: EC8702 Adhoc and Wireless Sensor Networks
Name of the Faculty member: Mr.K.Ragavan

Sl.No.	Topic(s)	Activity*	Reference
UNIT V			
1.	Berkeley Motes	Library	Ruiz-Sandoval, Manuel; Nagayama, Tomonori; Spencer, B. F. (2006). Sensor Development Using Berkeley Mote Platform. Journal of Earthquake Engineering, 10(2), 289–309.



2.	Node Level Software Platform	Pro-Con-Grid	Feng Zhao, Leonidas Guibas, —Wireless Sensor Networks: an information processing approach, Elsevier publication, 2004.
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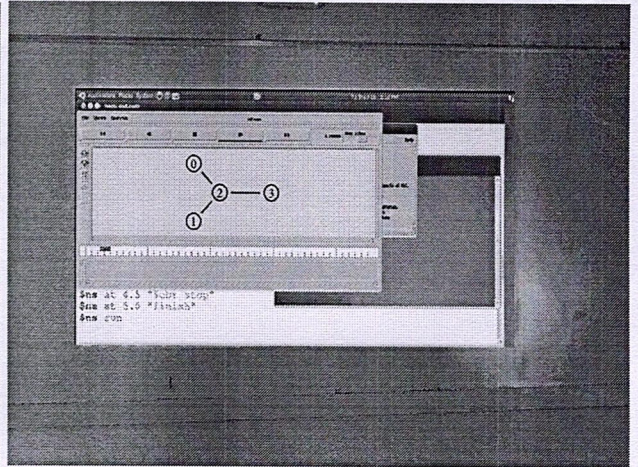


3.	Node Level Simulator-NS2	Simulation	Feng Zhao, Leonidas Guibas, —Wireless Sensor Networks: an information processing approach, Elsevier publication, 2004.
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```

#save file vd_ns2.tcl
# Simulation network - TCP/UDP protocol
# Create a simulation object
set ns [new Simulator]
# Define different color for data flows
$ns color 1 Blue
$ns color 2 Red
# Open NAM trace file
set nf [open out.nam w]
$ns namtrace-all $nf
# open the Trace file
set tf [open out.tr w]
set trace-all $tf
# Define a "finish" procedure
proc finish {} {

```



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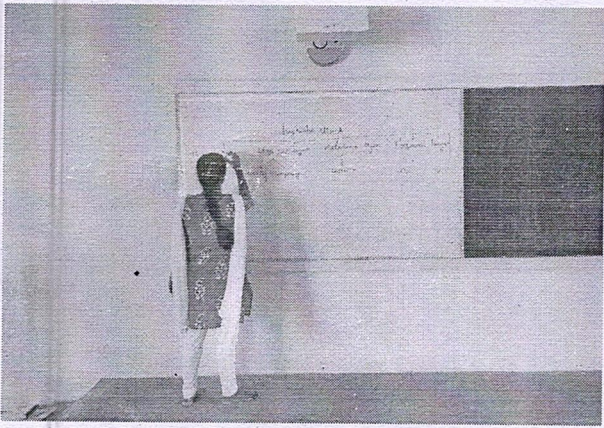
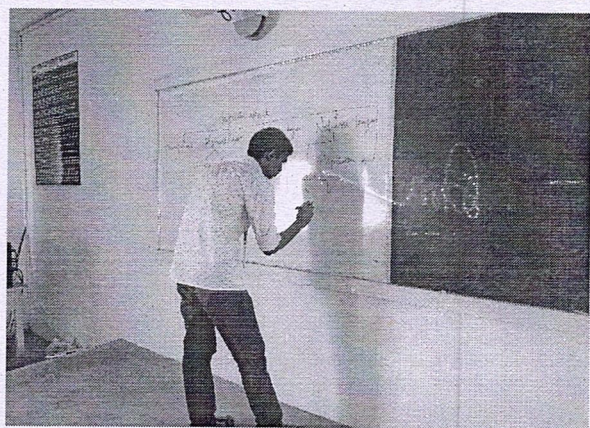
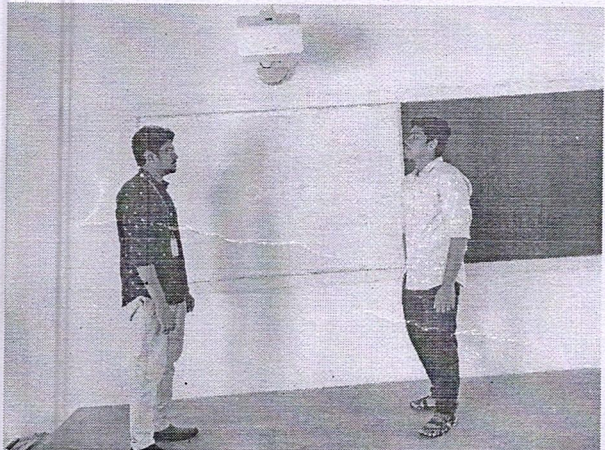
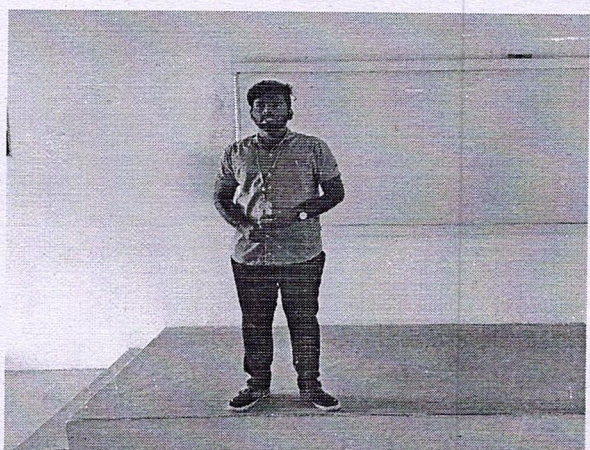
Prepared by: Mr.K.Ragavan
Date: 30.11.2021

Dr. S. Periyayagi 8/1/22

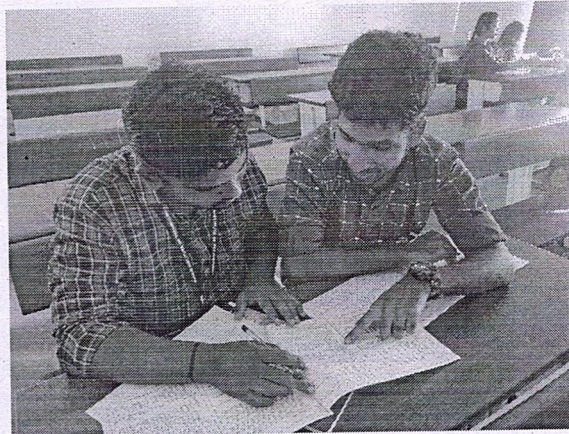
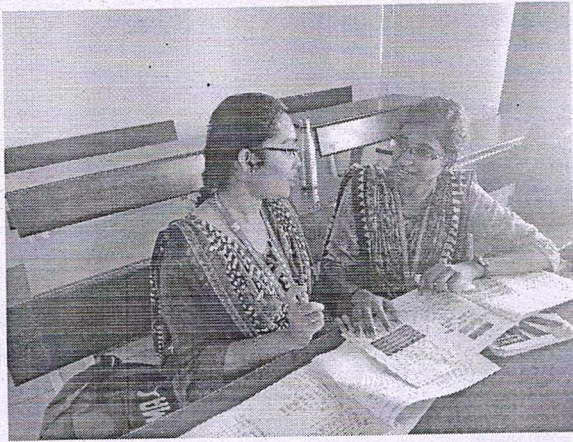
Approved by: Dr.S.Periyayagi
Date: 8-1-22

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Academic Year: 2021- 2022 (Odd Semester)
INNOVATIVE TEACHING METHOD

Degree, Semester & Branch: VII Semester B.E. ECE B
Course Code & Title: EC8702 Adhoc and Wireless Sensor Networks
Name of the Faculty member: Mr.K.Ragavan

Sl.No.	Topic(s)	Activity*	Reference
UNIT IV - SENSOR NETWORK SECURITY			
1	Layer wise attack in Wireless Sensor Networks	Mind Map	Holger Karl , Andreas willig, Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
			
2	Block hole attack, Flooding attack	Role Play	Holger Karl , Andreas willig, —Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
			

3	Key Distribution and Management	Think-Pair-Share	Holger Karl , Andreas willig, —Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
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Date:

Dr. S. Periyayagi 15/12/21

Approved by: Dr.S.Periyayagi
Date:

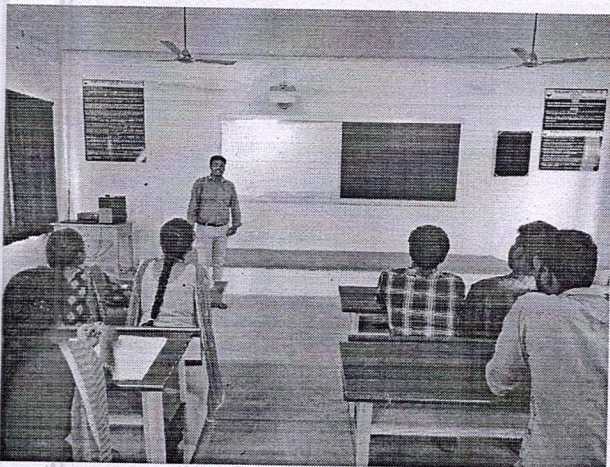
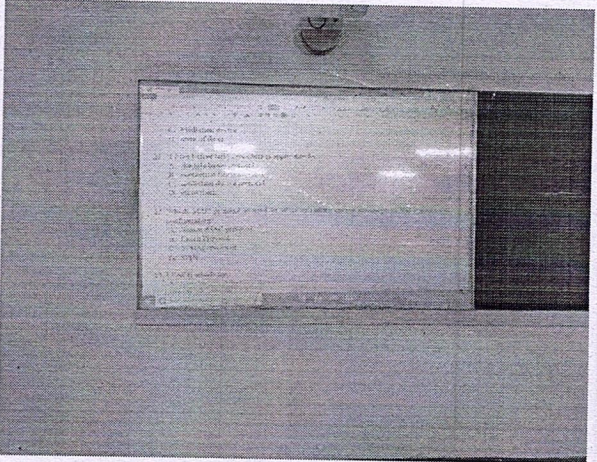

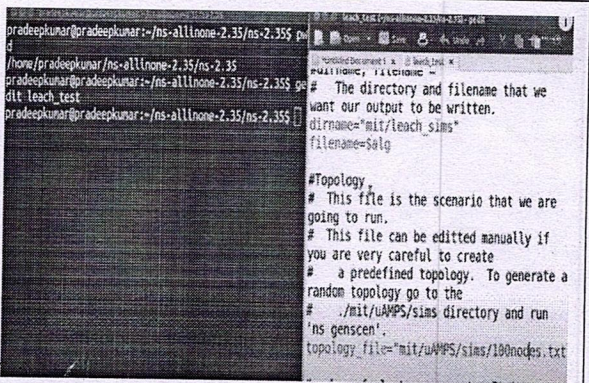
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INNOVATIVE TEACHING METHOD

Degree, Semester & Branch: VII Semester B.E. ECE B

Course Code & Title: EC8702 Adhoc and Wireless Sensor Networks

Name of the Faculty member: Mr.K.Ragavan

Sl.No.	Topic(s)	Activity*	Reference
UNIT III - WSN NETWORKING CONCEPTS AND PROTOCOLS			
1.	MAC protocols for Wireless Sensor Networks	Quescussion	Holger Karl , Andreas willig, Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
			
2.	Schedule based Protocols-LEACH	Simulation	Holger Karl , Andreas willig, Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
			

3.	Challenges and Issues in Transport layer Protocol	Animated Video	Holger Karl , Andreas willig, Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
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Video Explanation Transport Layer Protocols

www.MyBank.example

Checking account \$1000

TCP adds some "overhead" which means there will be some additional delay

When I connect to the bank (HTTP), I have TCP which guarantees all data is sent reliably.

Using the TCP guarantee, normally I can see the details of the company and so on. Your image is blurry and the voice is out of sync.

It is important that my voice and video are sent as quickly as possible.

If some data is lost, I might not even notice. If there is a lot of lost data I might temporarily see a blurry image or the voice might be out of sync.

We will keep sending voice and video to each other but we won't know if any data is being dropped.

UDP is a very simple protocol and does not provide any guarantee or reliable delivery.

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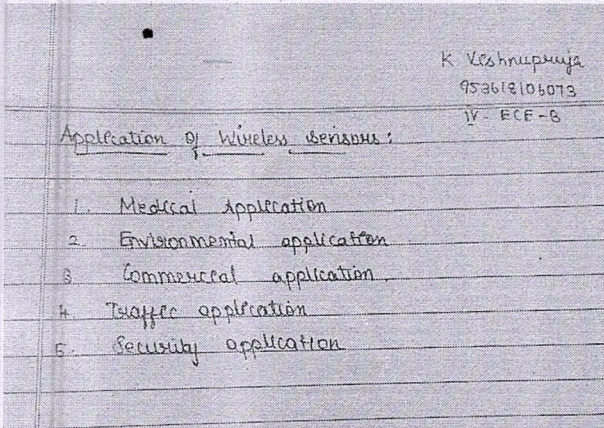
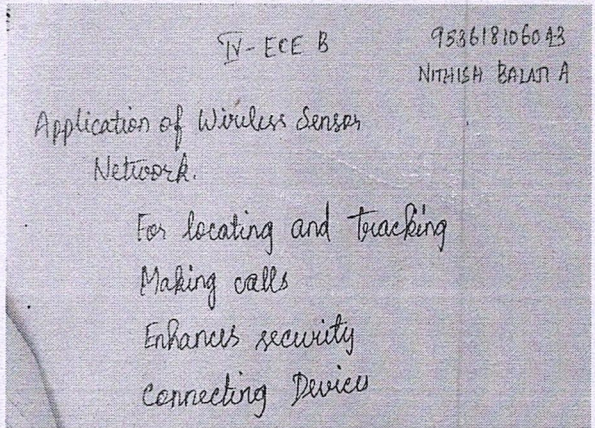

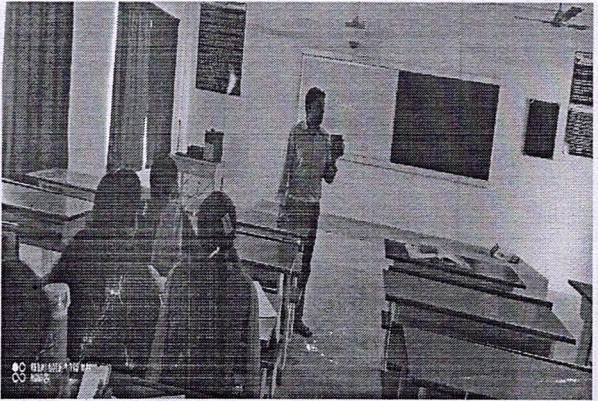
Prepared by: Mr.K.Ragavan
Date:

Dr. S. Periyannayagi

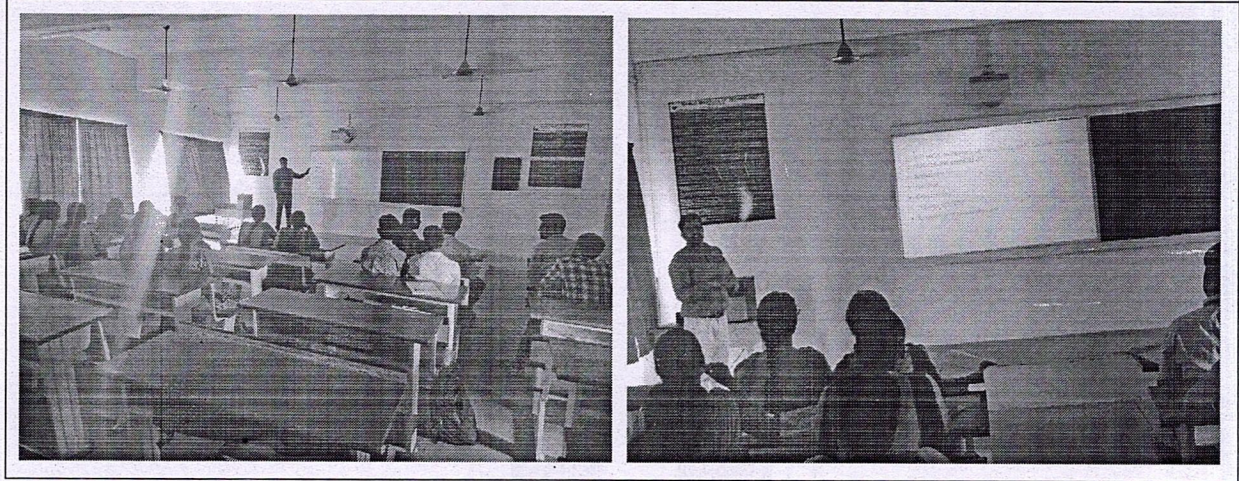
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Department of Electronics and Communication Engineering
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INNOVATIVE TEACHING METHOD

Degree, Semester & Branch: VII Semester B.E. ECE B
Course Code & Title: EC8702 Adhoc and Wireless Sensor Networks
Name of the Faculty member: Mr.K.Ragavan

Sl.No.	Topic(s)	Activity*	Reference
UNIT II - SENSOR NETWORKS – INTRODUCTION & ARCHITECTURES			
1.	Wireless Sensor Networks - Applications	One Minute Paper	Holger Karl , Andreas willig, Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
			
2.	Single Node Architecture- Hardware Components (Controller Part)	Hardware Demo	Holger Karl , Andreas willig, Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
			

3.	Wireless Networks – challenges, applications and architecture	Sensor challenges, and Quiz Dominos	Holger Karl , Andreas willig, Protocol and Architecture for Wireless Sensor Networks, John wiley publication, Jan 2006
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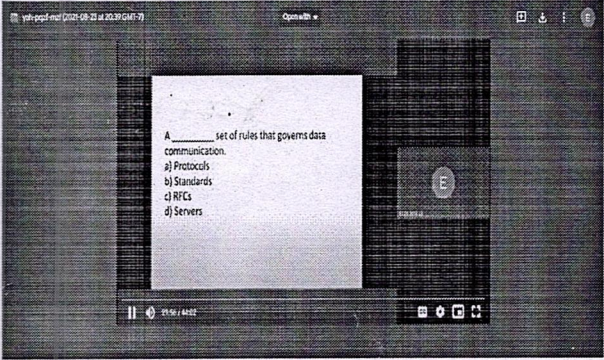
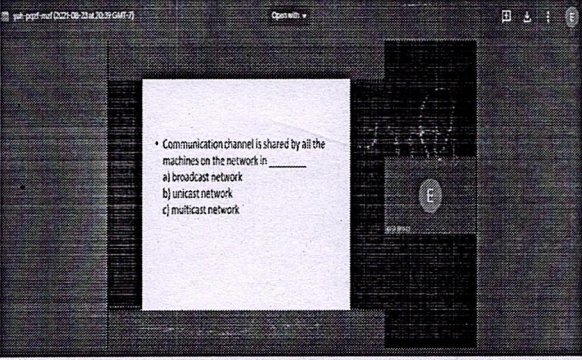
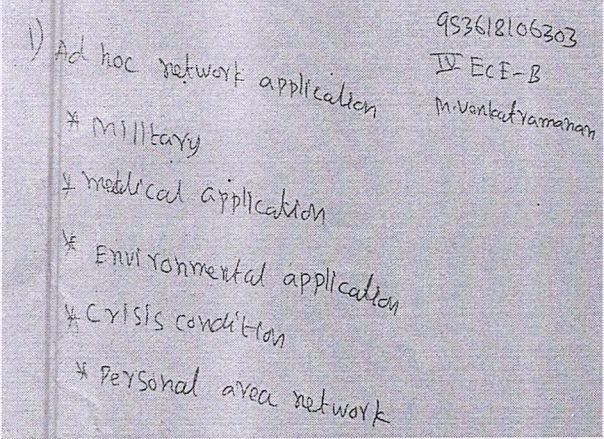
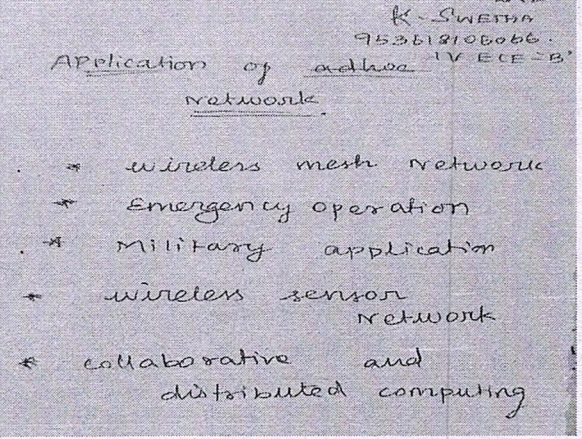
Prepared by: Mr.K.Ragavan
Date:

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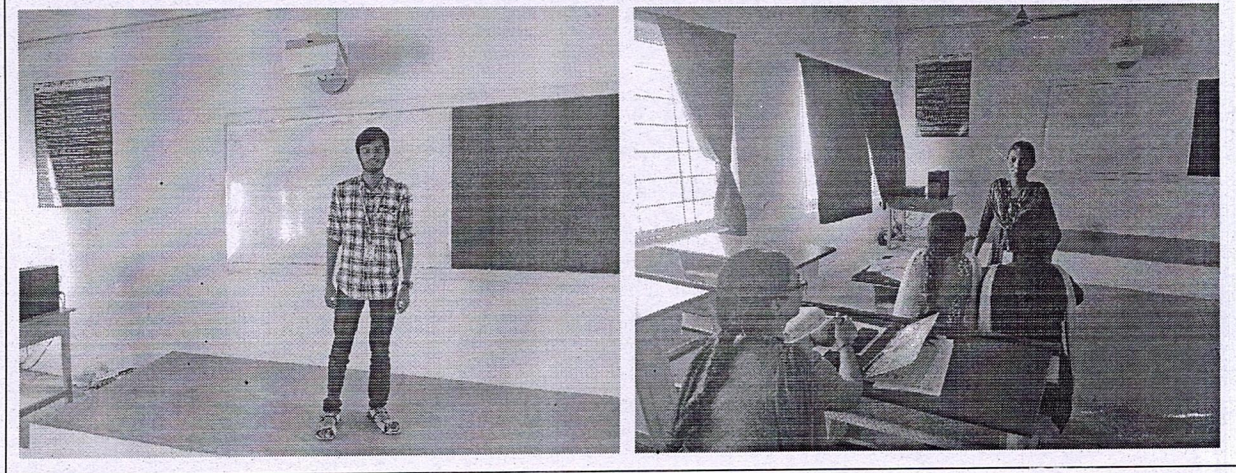
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INNOVATIVE TEACHING METHOD

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Course Code & Title: EC8702 Adhoc and Wireless Sensor Networks
Name of the Faculty member: Mr.K.Ragavan

Sl.No.	Topic(s)	Activity*	Reference
UNIT I - AD HOC NETWORKS – INTRODUCTION AND ROUTING PROTOCOLS			
1.	Elements of Adhoc Wireless Networks	Class Poll	C. Siva Ram Murthy and B. S. Manoj, - Ad Hoc Wireless Networks Architectures and Protocols, Prentice Hall, PTR, 2004.
			
2.	Applications of Adhoc Networks	Exit Slip	C. Siva Ram Murthy and B. S. Manoj, - Ad Hoc Wireless Networks Architectures and Protocols, Prentice Hall, PTR, 2004.
			

3.	Classification of Routing Protocols	Zero Minute Speech	C. Siva Ram Murthy and B. S. Manoj, - Ad Hoc Wireless Networks Architectures and Protocols, Prentice Hall, PTR, 2004.
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15/12/21

Approved by: Dr.S.Periyanyagi
Date: