



Department of Electrical and Electronics Engineering

Academic Year 2022 – 2023 (Odd Semester)

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

Course Code & Title: OCH752 Energy Technology

Name of the Faculty member (s): Mrs. S. Jeyanthi

Innovative Practice Description

- **Unit / Topic:** Unit I / Energy Crisis
- **Course Outcome:** CO 1
- **Topic Learning Outcome:** TLO 4
- **Activity Chosen:** One minute paper
- **Justification:**

An energy crisis is any significant bottleneck in the supply of energy resources to an economy. There are various causes, effects and solutions to the energy crisis. Since, 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 or issue before they begin discussing it.

- **Time Allotted for the Activity:** 5 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
CO 1	3	1	-	-	-	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	
Energy Crisis – One minute paper	
<p style="text-align: right;">Reg. No: 953619106059 Name: Sakthi Abirami N</p> <p><u>Energy crisis:</u> Causes of Global Energy Crisis:</p> <ul style="list-style-type: none"> * Overconsumption * Overpopulation * Poor Infrastructure * Wastage of Energy * Poor Distribution systems * Wars and Attacks * Miscellaneous factors * Major accidents and Natural calamities <p><u>Effects :-</u></p> <ul style="list-style-type: none"> * Environmental Effects * Increasing prices of the Fuel Resources. * Political Disturbances * The effects on the tourism Industry <p><u>Solution:</u></p> <ul style="list-style-type: none"> * Lightning controls * Easier grid access * Energy simulation * Buy Energy efficient products. 	<p style="text-align: right;">Reg No: 953619106068 Name: P. Sneha</p> <p style="text-align: center;">Energy Crisis</p> <p>Causes of Global Energy Crisis:</p> <ol style="list-style-type: none"> 1. Overpopulation 2. Overconsumption 3. Poor infrastructure 4. Wastage of energy 5. Unexplored Renewable Energy option 6. Poor distribution system. 7. Miscellaneous Factors <p>Effects of Global Energy crisis:</p> <ol style="list-style-type: none"> 1. Environmental effects 2. Increasing prices of Fuel resources 3. Political disturbances 4. Effect on Tourism industry <p>Solution of Energy crisis:</p> <ol style="list-style-type: none"> 1. Lighting control 2. Easier Grid Access 3. Energy simulation 4. Perform energy audit

• **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:** (E.g.: Outcome attainment would have increased due to innovative practice over conventional 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:**

- ✓ In the class mostly boys hesitate to answer the questions.
- ✓ Time utilization for conducting activity.

References:

- ❖ Rao, S. and Parulekar, B.B., Energy Technology, Khanna Publishers, 2005.
- ❖ Rai, G.D., Non-conventional Energy Sources, Khanna Publishers, New Delhi, 1984.



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Innovative Practice Description

- **Unit / Topic:** Unit II / Efficiency, merits and demerits of the above power plants

- **Course Outcome:** CO 2

- **Topic Learning Outcome:** TLO 13

- **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 VII year ECE students, after explained the concept of Efficiency, merits and demerits of the thermal, hydel, nuclear power plants. First, I asked the students to think about the difference between all the above power plants for 2 minutes. Then I make them as a pair to discuss their neighbour's and asked the students to discuss about pros and cons of various power plants 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.

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- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 2	3	-	-	-	-	-	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 a team

• Images / Screenshot of the practice:

Innovative Teaching Method Execution		
Efficiency, merits and demerits of the above power plants		
– Think Pair Share		
Pros & Cons Of Power Plants 953619106071, 953619106066		
Thermal Power plant	Nuclear power plant	Hydel Power plant
<u>Advantages</u> * Initial cost is lesser than the hydro electric power plant. * less space is required than that of Hydel plant. * Fuel used is quite cheap <u>Disadvantages</u> * Efficiency of plant decreases with time * Air pollution is a major problem in thermal power plant * power generation cost is high.	<u>Advantages</u> * Low capital cost in bigger unit sizes. * No problemous space is required * no ash disposal <u>Disadvantages</u> * High initial & maintenance cost * Radio active waste may affect the workers health & other surrounding * well trained personnel is required for operation.	<u>Advantages</u> * Operating cost and running cost is considerably lower than that of thermal plants. * no problem of fuel and ash handling & hence no pollution * water is renewable source of energy & available at free of cost <u>Disadvantages</u> * capital cost is high * The site selected for laying this plant is usually away from local centres. * It takes long time for its construction & commissioning

Energy Technology		M. Sabniyah - 953619106051
		R. Vinethini Rajam - 953619106080
d) HYDEL POWER PLANT		
<u>Advantages:</u>	<u>Disadvantages:</u>	
* water is a renewable source and available at free of cost.	capital cost is considerably high.	
* No problem of fuel and ash handling and hence no pollution.	long time for construction & commissioning	
NUCLEAR POWER PLANT		
* No ash disposal problem.	High initial & maintenance cost.	
* less space is required.	well trained personnel is required	
THERMAL POWER PLANT		
* Initial cost is less than hydel plant.	efficiency decreases with time.	
* Fuel used is quite cheap.	power generation cost is high.	

- **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:*** (E.g.: Outcome attainment would have increased due to innovative practice over conventional 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 15 minutes.

References:

- ❖ Rao, S. and Parulekar, B.B., Energy Technology, Khanna Publishers, 2005.
- ❖ Rai, G.D., Non-conventional Energy Sources, Khanna Publishers, New Delhi, 1984.



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Innovative Practice Description

- **Unit / Topic:** Unit III / Solar energy, solar thermal systems, flat plate collectors, focusing collectors
- **Course Outcome:** CO 3
- **Topic Learning Outcome:** TLO 11
- **Activity Chosen:** Laboratory visit
- **Justification:**

After teaching the constructional and different types of solar collectors I thought of conducting this as Laboratory visit for making the students to give overview of flat plate collector which enhance the learning level and as a teacher I can judge the understanding level of the student

- **Time Allotted for the Activity:** 20 minutes

- **Details of the Implementation:**

After teaching the concept, I thought of conducting this activity for making the students to give practical exposure, which enhance the learning level and as a teacher I can judge the understanding level of the students.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 3	3	1	1	-	1	-	1	-	1	1	-	1

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	PO7
	1
Justification for correlation	The basic applications of solar energy in an environmental context are taught to the students

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

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

Challenges faced in implementation:

- Time utilization for conducting activity.

References:

1. Rao, S. and Parulekar, B.B., Energy Technology, Khanna Publishers, 2005.
2. Rai, G.D., Non-conventional Energy Sources, Khanna Publishers, New Delhi, 1984.



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Innovative Practice Description

- **Unit / Topic:** Unit IV / Biogas
- **Course Outcome:** CO 4
- **Topic Learning Outcome:** TLO 17
- **Activity Chosen:** Minute talk activity
- **Justification:**

Minute talk activity is to pick a topic that lends itself to the idea of making lists of methods, pros and cons/advantages and disadvantages for some issue. Break students up into small groups. Have the groups come up with at least three points about the topic. Additionally, let students know whether they should be putting their lists together in point form or full sentences. Once students have had time to complete the activity, bring the class back together to share and discuss points on each side.

- **Time Allotted for the Activity:** 10 minutes
- **Details of the Implementation:**

Minute talk activity require students to actively engage in their learning, often by connecting their prior knowledge to new information. With this activity, a student frequently interacts with a textbook, notes from class, an instructor, classmate, or study group.

In my subject Minute talk activity was conducted for Unit-IV Biomass Energy for the topic Biogas. The students were voluntarily presented for a minute.

- **CO – PO / PSO mapping:**

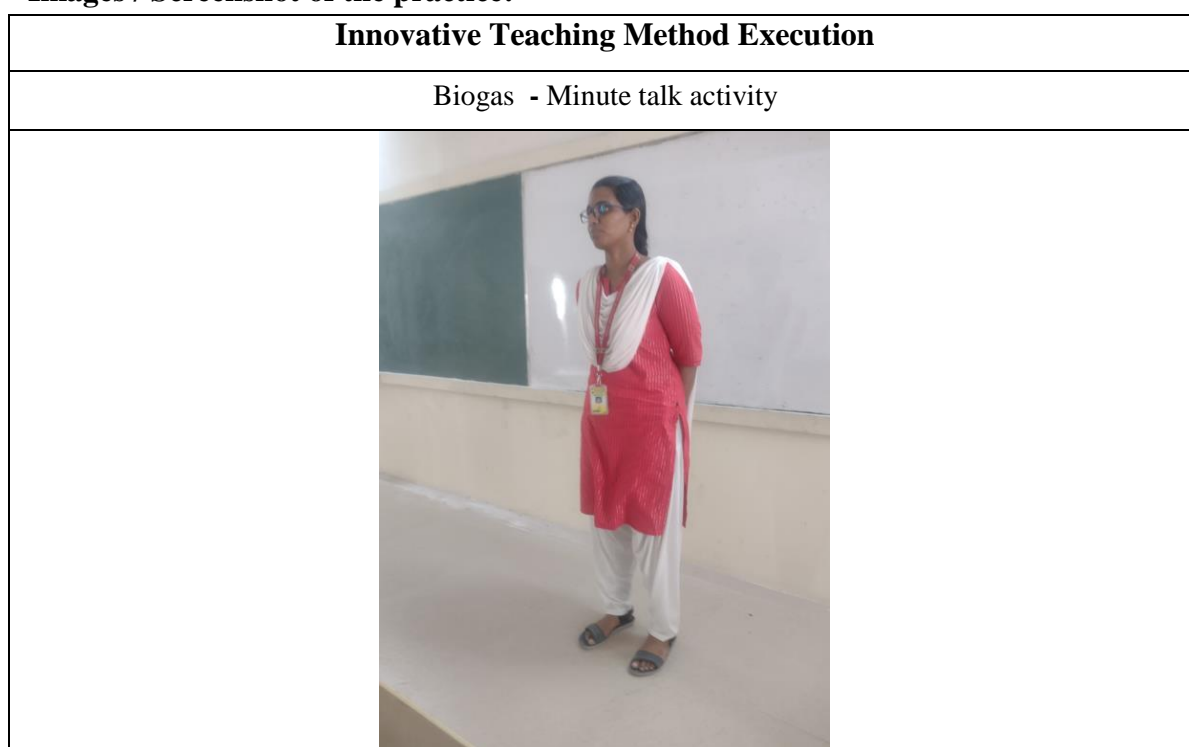
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 5	3	-	-	-	-	-	1	-	1	1	-	1

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

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

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

The benefits of minute talk activity are a great way for students to recollect 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 and to present. Also this activity made slow learners to remember the information more quickly.

Challenges faced in implementation:

Normally teachers will give longer explanations in the notes section of the topic. I planned the activity for 10 minutes only. But in real scenario it takes 15 minutes to complete this activity.

References:

1. Rao, S. and Parulekar, B.B., Energy Technology, Khanna Publishers, 2005.
2. Rai, G.D., Non-conventional Energy Sources, Khanna Publishers, New Delhi, 1984.

Signature of Faculty Member

HOD



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Innovative Practice Description

- **Unit / Topic:** Unit V / Energy audit – Types methodology
- **Course Outcome:** CO 5
- **Topic Learning Outcome:** TLO 21
- **Activity Chosen:** Strip sequence
- **Justification:**

This activity helps students apply what they have learned through reading or didactic teaching. This approach can strengthen students' logical thinking processes and test their mental model of a process. The activity can be done in pairs or groups.

- **Time Allotted for the Activity:** 10 minutes
- **Details of the Implementation:**

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

In my subject Mini map was conducted for Unit-V Energy Conservation for the topic Energy audit – Types methodology. The students are actively participated in this event.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 5	3	1	1	-	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 a team

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

Innovative Teaching Method Execution	
Energy audit – Types methodology / Strip Sequence	
	953619106053
	<p>Phase II Audit</p> <ol style="list-style-type: none"> 1) Primary data gathering, Process flow diagram & energy utility diagram 2) Conduct of detailed trials / experiments for Selected energy guzzlers 3) Conduct survey & monitoring 4) Identification & development of energy conservation Opportunities 5) Cost benefit analysis 6) Reporting & Presentation to Top management.

• **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:** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

The benefits of Strip Sequence are a great way for students to make notes on all of the information they receive. It made the students the general steps involved in the process and make the students to implement the procedure for the particular topic.

❖ **Challenges faced in implementation:**

Normally teachers will give longer explanations in the notes section of the topic. The students are made into groups and to arrange the strip of process for the topic of Energy Audit. I planned the activity for 10 minutes only. But in real scenario it takes 15 minutes.

References:

1. Rao, S. and Parulekar, B.B., Energy Technology, Khanna Publishers, 2005.
2. Rai, G.D., Non-conventional Energy Sources, Khanna Publishers, New Delhi, 1984.