Department of Electronics & Telecommunication Engineering

Academic Year – 2025-2026	Class: BE
SEM-I	Date:- 23.07.2025
CO: 1	PO: 1,2,4, 5, 9, 10, 12

Innovative Teaching Methods

Title of Innovation method/activity: Experiential Learning

1. Name of Faculty: Mr. A. R. Chaudhari.

2. Subject: Radiation & Microwave Theory (404181)

3. Objective of Method:

1. Analyze and interpret measurement data (Radiation patterns, impedance curves, SWR) and compare with theoretical predictions.

2. Collaborate effectively in teams to conduct experiments, discuss results, and present findings

4. Topic Covered through Activity:

1. Impact of antenna parameter on Performance.

5. Description of method with Benefits:

Experiential learning, or learning by direct experience, is extremely beneficial for improving knowledge retention, critical thinking, and problem-solving abilities. It fosters deeper understanding and engagement compared to typical rote learning by encouraging active involvement, reflection, and application of knowledge in real-world circumstances.

in teaching antenna performance parameters involves students actively engaging in hands-on experiments, simulations, and design activities rather than passively listening to lectures. Students begin by building or simulating antennas, measuring key performance parameters like gain, radiation pattern, and SWR using real instruments or software tools. They then reflect on their observations by comparing experimental data with theoretical expectations, discussing discrepancies, and understanding the underlying physics. Based on their reflections, students conceptualize how antenna design factors influence performance and iterate their designs to optimize outcomes.

- **The method** :

This cycle of experience → reflection → conceptualization → experimentation encourages deep understanding through direct interaction with real-world phenomena, fostering critical thinking and problem-solving.

Roles and Responsibilities

- **Teacher**
  - **Facilitator of Learning:**
    Guide students through hands-on activities, encourage exploration, and support discovery rather than just delivering lectures.
  - **Designer of Experiential Activities:**
    Prepare and organize experiments, simulations, of antenna & performance parameters that are engaging and relevant.

- **Mentor and Coach:**
  Help students interpret data, troubleshoot problems, and connect practical results with theoretical concepts.
- **Promote Reflection:**
  Encourage students to think critically about their observations and experiences, facilitating group discussions and reflections.
- **Assessment and Feedback:**
  Assess student performance through practical tasks, reports, and presentations, and provide constructive feedback to support improvement.

- **Student**

Students (group of 3/4 students) become active researchers in experimental learning. They take ownership of their learning by selecting the antenna and collect the data to measure the performance of an antenna by Build or set up antennas physically or in simulation. Students perform measurements like SWR. Plot radiation patterns using a rotating setup and signal strength readings, the beamwidth. By repeating this process with another antenna and investigating information, and collaborating for conclusion.

• Active Participants:
Engage fully in building, testing, and measuring antenna parameters through experiments or simulations.

• Critical Thinkers:
Analyze results, question discrepancies, and seek to understand underlying principles rather than just following instructions.

• Self-Directed Learners:
Take initiative in researching antenna concepts, troubleshooting issues, and applying feedback to improve designs.

• Communicators:
Present findings clearly through reports/presentations/discussions, articulating their understanding and reasoning.

6. Assessment:

Brief report with conclusion

student-centered approach that emphasizes learning through direct experience, reflection, and application. Assessing experiential learning requires tools that capture both the process and the outcomes of student engagement in real-world or simulated environments, prepare the small report reflecting the results with valid conclusion.

Overall Individual Performance

- **Rubrics for Assessment**

Rubrics	3 High 2M	2 (Moderate) 1.5M	1 (Low) 1M
1. Hands-on Experimentation	Accurately builds and sets up antenna; operates instruments independently and correctly	Builds antenna with minor errors; operates instruments with some guidance	Unable to build antenna or operate instruments properly
2. Data Collection & Recording	Collects precise, complete, and well-organized data consistently	Data mostly complete and organized; minor errors present	Data is missing, inaccurate, or poorly organized
3. Analysis & Interpretation	Thoroughly analyzes data; correctly interprets antenna parameters; explains discrepancies	Analyzes data correctly with minor errors; interprets parameters adequately	Minimal or incorrect data analysis; poor understanding of results
4. Teamwork & Collaboration	Works collaboratively, and supports team members	Works well in a group, but with occasional imbalance in	Rarely contributes; hinders group progress.

	effectively.	roles.	
5. Communication & Delivery	Communicates findings clearly and professionally engaging answers.	Information is mostly clear; structure and delivery are satisfactory.	Unclear answers & poor communication.

7. Evaluation Sheet & Feedback

Sr. No	Name	Hands-on Experimentation	Data Collection & Recording	Analysis & Interpretation	Teamwork & Collaboration	Communication & Delivery	Final Marks (10)	Sign
1	Aher Anurag	2	2	1.5	1	1.5	8	
2	Aher Shubham	2	1	1	1	1	6	
3	Akhade Prerna	1.5	2	1.5	2	1.5	8.5	
4	Bavne Priyanka	1	2	1.5	1	1	6.5	
5	Bhamare Lalit	2	2	1	2	1.5	8.5	
6	Burkul Sanjana	1.5	1.5	1	1.5	1	6.5	
7	Daware Nilam	2	2	1.5	1	1	7.5	
8	Desai Shraddha	2	2	1	1	1	7	
9	Devkar Sanika	1	2	1.5	2	1.5	8	
10	Hatkar Krushna							
11	Jadhav Sneha	2	2	1.5	2	2	9.5	
12	Joshi Avdhut	1.5	2	1.5	1	1	7	
13	Joshi Kaushal	2	2	1.5	1	1	7.5	
14	Kedar Dhanshree							
15	Kshirsagar Monika	2	2	2	1	2	9	
16	Kulkarni Nikita	1	2	1	1	2	7	
17	Mahajan Divya	2	2	2	2	2	10	
18	Malunjkar Vivek	2	2	2	2	1.5	9.5	
19	More Itesh						0	
20	More Prajakta	2	2	2	1	1	8	
21	Padol Rutik						0	
22	Pagare Tanushree							
23	Patil Aastha	2	2	1.5	1.5	1	8	
24	Patil Vedanti	2	2	1.5	2	2	9.5	
25	Pawar Suyash	2	2	2	1.5	1.5	9	
26	Sarode Vaibhav	1	2	2	1.5	1.5	8	
27	Shejwal Prathamesh	2	2	2	1.5	1.5	9	
28	Shelke Tejaswini	1	2	2	1	2	8	
29	Shete Kaushalya	2	2	1.5	2	2	9.5	
30	Shreya Belhekar	2	2	1.5	1	1.5	8	
31	Somvanshi Vidya	1.5	2	2	1.5	1	8	
32	Sonawane Sarthak	2	2	1.5	1	1.5	8	
33	Suri Aryan	2	2	2	1.5	1	8.5	
34	Tile Sanika	1.5	1.5	1.5	1	1.5	7	
35	Vispute Varad	2	2	1	1.5	1	7.5	

Sr. No	Name	Hands-on Experimentation	Data Collection & Recording	Analysis & Interpretation	Teamwork & Collaboration	Communication & Delivery	Final Marks (10)	Sig
36	Wagh Dipti	2	2	2	1	1	8	
37	Aher Sarvesh	1.5	2	1.5	1.5	1	7.5	
38	Dhamane Tanmay	2	1	1.5	1	1.5	7	
39	Jagtap Piyush	2	2	2	1.5	1	8.5	
40	Kardile Sneha	2	2	1.5	2	1.5	9	
41	Khairnar Lokesh	2	2	2	1.5	1.5	9	
42	Kumbhare Harshal							
43	Memane Sakshi	2	2	1.5	1	1	7.5	
44	Nikam Yash	2	2	2	1	1	8	
45	Patil Manish	2	2	2	2	1	9	
46	Patil Vedehi	2	2	2	1.5	1	8.5	
47	Pawar Vrushali	2	2	1.5	1.5	1	8	
48	Shinde Omkar							
49	Shinde Prajakta	2	2	1.5	2	2	9.5	
50	Shinde Sanika	2	2	2	2	2	10	
51	Shirude Sakshi	2	2	1.5	1.5	2	9	
52	Sonawane Abhishek	2	2	1	2	2	9	
53	Tagad Om	2	2	2	1	2	9	
54	Wagh Dipali	2	2	2	1	2	9	
55	Yeole Shrushti	2	2	1.5	1.5	2	9	
56	Farhan Khan							
57	Ahiraro Om							

8. Impact Analysis

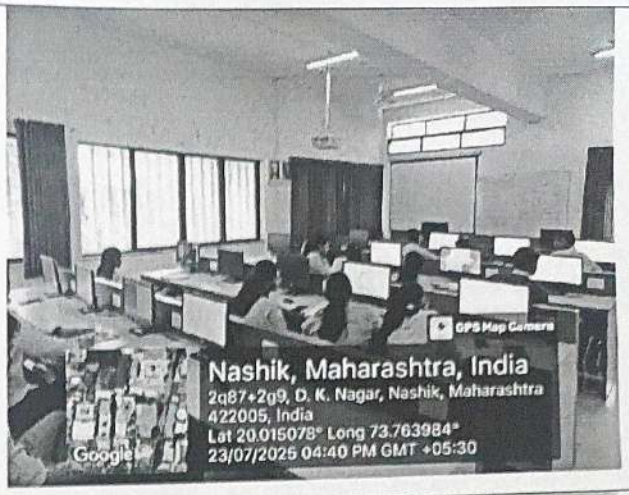
Sr. No	2- Yes	1-No
Do you find Methodology Helpful	40	8

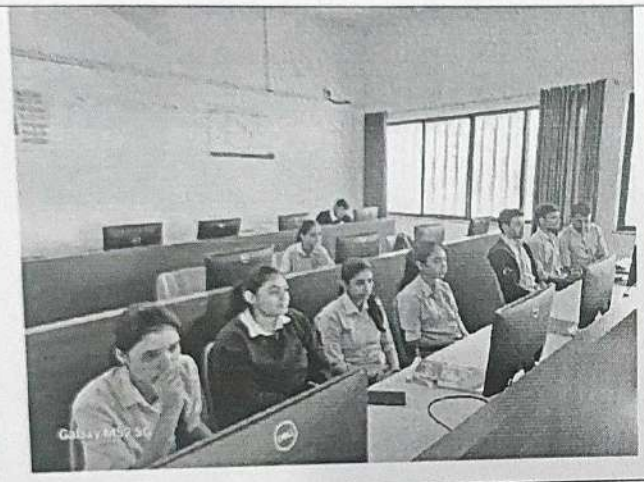
Analysis:-

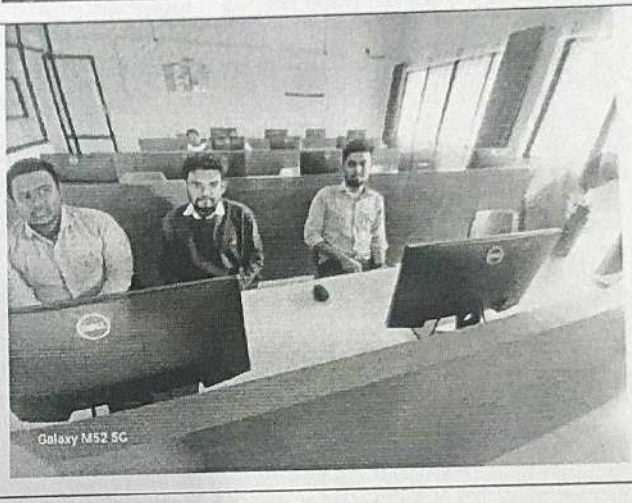
- 91.83 % students score more than 70% in activity.
- 83 % agreed the method is helpful.

9. Conclusion:- By observation from students response & feedback the experiential learning offers a dynamic and engaging approach to education, where learners gain knowledge through direct experience, reflection, and application. Unlike traditional learning methods, it encourages critical thinking and personal growth by connecting theory to real-world contexts. This approach empowers students to take ownership of their learning, develop practical skills, and adapt to complex situations.

10. Activity Picture







10. **For review and critique contact: e-mail address of faculty and HOD**
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Mr. A. R. Chaudhari
Course In charge

Mr. A. R. Chaudhari
Module Coordinator

HoD

Sr. No	Name	Sign
1	Shubham Aher	
2	Anurag Aher	
3	Priyanka Bavne	
4	Lalit Bhamare	
5	Sanjana Burkul	
6	Aadit Darole	
7	Nilam Daware	
8	Shraddha Desai	
9	Sanika Devkar	
10	Krushna Hatkar	
11	Sneha Jadhav	
12	Avdhut Joshi	
13	Kaushal Joshi	
14	Akshada Kakade	
15	Dhanshree Kedar	
16	Lokesh Khairnar	
17	Monika Kshirsagar	
18	Nikita Kulkarni	
19	Divya Mahajan	
20	Vivek Malunjkar	
21	Itesh More	
22	Prajakta More	
23	Yash Nikam	
24	Rutik Padol	
25	Tanushree Pagare	
26	Aastha Patil	
27	Vedanti Patil	
28	Vedehi Patil	
29	Suyash Pawar	
30	Vaibhav Sarode	

Sr. No	Name	Sign
31	Prathamesh Shejwal	
32	Tejas Shelke	
33	Tejaswini Shelke	
34	Kaushalya Shete	
35	Prajakta Shinde	
36	Shreya Belhekar	
37	Vidya Somvanshi	
38	Abhishek Sonawane	
39	Sarthak Sonawane	
40	Aryan Suri	
41	Sanika Tile	
42	Varad Vispute	
43	Dipti Wagh	
44	Kanchan Abhang	
45	Sarvesh Aher	
46	Prerna Akhade	
47	Tanmay Dhamane	
48	Piyush Jagtap	
49	Sneha Kardile	
50	Harshal Kumbhare	
51	Sakshi Memane	
52	Om Ahirrao	
53	Vrushali Pawar	
54	Omkar Shinde	
55	Sanika Shinde	
56	Sakshi Shirude	
57	Om Tagad	
58	Dipali Wagh	
59	Shrushti Yeole	

Farhan Khan

Manish Patil