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Department of Instrumentation and Control

Innovative Teaching-Learning Method

Class:	TE Instrumentation & Control
Subject:	Embedded Systems
Name of ITL Method:	Peer Teaching (**Jigsaw Method**)
Name of the Faculty:	Dr. Y. P. Patil
Date:	19/10/2024, 21/10/2024 and 22/10/2024.
No. of Students Participated	20
PO/PSO Mapped	PO1(2), PO2(1), PO9(1),PO10(1), PO12(1), PSO1(2), PSO3(1)

Learning Objective:

1. Able to improve student understanding of complex concepts through active learning,
2. Able to enhance communication skills,
3. Able to increase confidence for both the teacher and learner,
4. To have deeper subject matter comprehension by explaining concepts to others,
5. Fostering collaboration and teamwork
6. Potentially leading to higher academic achievement for all students involved.

Outcomes: On completion, students will able to

- **Deeper learning:** Students are forced to process information more thoroughly by actively teaching others, leading to a better grasp of complex engineering concepts.
- **Improved communication skills:** Explaining technical ideas to peers helps students develop clear and concise communication abilities crucial for collaboration and professional practice.
- **Confidence building:** Taking on the role of a teacher can boost a student's self-esteem and confidence in their understanding of the subject matter.
- **Active learning environment:** Peer teaching encourages active participation in the learning process, moving beyond passive listening to actively engaging with the material.
- **Collaborative learning:** Working together in peer groups promotes teamwork and the ability to share ideas and perspectives.
- **Personalized learning:** Peer teaching allows for tailored explanations based on individual needs, potentially addressing learning gaps more effectively.
- **Feedback mechanism:** Students can receive immediate feedback from peers, helping them identify areas for improvement and adjust their understanding
- **Increased engagement:** The interactive nature of peer teaching can enhance student motivation and engagement in the learning process
- **Application of knowledge:** By explaining concepts to others, students are forced to apply their knowledge to real-world scenarios, solidifying their understanding

Description :

The best teachers do more than just read from a textbook. They understand that there are many different techniques, theories, and teaching models that can give students a well-rounded education that's foundational to a lifetime of success and continual improvement.

Effective learning happens in many ways. Some students learn well directly from a teacher. Others are skilled independent learners. Yet, one of the most effective active learning techniques is that of peer learning. Put simply, peer learning is when students teach each other. This type of learning aids retention and encourages communication and collaboration.

What Is Peer Learning?

Peer learning is an education method that helps students solidify their knowledge by teaching each other. One student tutoring another in a supervised environment can result in better learning and retention. Why? Because to teach another, one must first fully understand a concept themselves. Verbalizing a concept and sharing the information with a peer serves to reinforce the knowledge gained.

Peer Learning Models

Effective peer learning can take place through many different models and strategies. See some of the tried-and-true ways to encourage peer learning.

Jigsaw Method: In the jigsaw method of peer learning, students are split into groups, with each group given a different topic to study. Then, one student from each group is taken to form a collaborative group where multiple concepts are discussed. If there are eight jigsaw groups, then eight topics will ultimately be discussed in one group.

The jigsaw method is a teaching strategy that involves dividing a class into small groups and having students become experts on a specific topic:

1. **Prepare**

The teacher divides the lesson into subtopics and assigns each student a subtopic to learn.

2. **Form expert groups**

Students with the same subtopic form expert groups to discuss and clarify their understanding.

3. **Teach**

Students return to their original groups and teach each other what they learned.

4. **Apply**

Students use the information they learned to create a final product, participate in a class discussion, or take a test.

Impact of Innovative Method: This activity helps students to enhance team work spirit, individual responsibility, interpersonal skills, self-learning, and analytical skills.

The jigsaw method can help students:

- **Develop collaboration skills**: Students learn to rely on each other and work together to achieve a common goal.
- **Improve comprehension**: Students learn to understand and retain information.
- **Build empathy**: Students learn to respect and like one another.

Rubrics used:

Skills/Criterion/Category	2 Points	1.5 Points	1 Points	0.5 Points
Deep Learning	Very Good	Good	Average	Poor
Communication Skills	Very Good	Good	Average	Poor
Confidence	Very Good	Good	Average	Poor
Collaboration and Teamwork	Very Good	Good	Average	Poor
Feedbacks/QA	Very Good	Good	Average	Poor

Assessment:

Sr. no.	Name of student	Deep Learning (2)	Communication Skills (2)	Confidence (2)	Collaboration and Teamwork (2)	Feedbacks/QA (2)	Total (10)	Average (10)
Peer Group A: History, classification, application and purpose of embedded systems								
1	Abhijit Gangurde	1	0.5	1	0.5	0.5	3.5	**4.64**
2	Aditya Gangurde	1	1	1	0.5	0.5	4	
3	Aniket Gangurde	1	1.5	1	1	0.5	5	
4	Rushika Gangurde	1.5	1.5	1.5	1.5	1.5	7.5	
5	Ruchika Hengde	1.5	1	1	1	1	5.5	
6	Sandesh Baviskar	1	0.5	0.5	0.5	0.5	3	
7	Gayatri Sonje	1.5	1	0.5	0.5	0.5	4	
Peer Group B: Microprocessor Vs Microcontroller								
8	Nishita Chawala	1.5	1.5	1	1.5	1	6.5	**4.66**
9	Tejal Borhade	0.5	0.5	0.5	0.5	0.5	2.5	
10	Kalyani Ahire	1	1	1	1	1	5	
Peer Group C: RISC and CISC Architecture								
11	Kanchan Jagtap	2	1.5	2	2	2	9.5	**9.5**
12	Gayatri Walve	2	1.5	2	2	2	9.5	
Peer Group D: ASICS and PLDs								
13	Rutuja Tarle	1	0.5	0.5	0.5	0.5	3	**4.62**
14	Sakshi Pol	1	1	1	1	1	5	
15	Siddhi Bodke	2	1.5	1.5	1.5	1.5	8	
16	Sai Deore	0.5	0.5	0.5	0.5	0.5	2.5	
Peer Group E: RTOS based Embedded System								
17	Yash Bhamare	1	1	1	1	1	5	**5.25**
18	Mahesh Kasav	1	1	1.5	1	1	5.5	
Peer Group F: Arduino Vs Raspberry Pi								
19	Atharva Bramhankar	1.5	1.5	1.5	1.5	1.5	7.5	**5**
20	Nikhil	0.5	0.5	0.5	0.5	0.5	2.5	

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Photos:

The students of TE (I&C) during the demonstration of Peer Teaching at the Department of Instrumentation & Control Engineering on 19/10/2024, 21/10/2024 and 22/10/2024.

Subject Incharge
Dr. Y. P. Patil

HOD
Dr. B. J. Parvat