



Mechanical Engineering Department

Innovative Teaching Method - Report

Academic Year – 2020-21	Class: TE
Semester – I	Date : 12/12/2020
CO: CO3	PO: PO1, PO2, PO9, PO10, PO12

1. Title of Innovation method/activity: Think-Pair-Share

2. Name of Faculty: Mr. S. J. Suryawanshi

3. Course: Turbomachines (C304)

4. Objective of Method

- a. To understand the design of Francis turbine
- b. To understand the velocity diagram and calculate the design parameters from the velocity diagram
- c. To know the appropriate procedure to solve the design problem of Francis turbine

5. Topic Covered through Activity

Velocity diagram of Francis turbine, Design parameters of the Francis turbine.

6. Description of method with Benefits (8 – 10 lines)

Description of method

Monitor and support students as they work through the following in this method:

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

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

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

Benefits of method

- 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.
- The Think-Pair-Share activity gives students the opportunity to feel more comfortable sharing their thoughts.

7. Roles and Responsibilities

- **Teacher**
 - Provide the study material on working and analysis of Francis turbine.
 - Explain the importance of group discussion in solving a particular problem.
- **Student**
 - Go through all the material provided on the Francis turbine.
 - Once topic assigned, understand it and solve independently. After this each student should be paired with another student or a small group and discuss any doubt with his partner. Then students have to discuss individually within the group.
 - Actively participate in group and contribute by means of discussion.
- **Group**
 - Form the group of members as per the guidelines by teachers.
 - Understand and discuss to finalize the best solution for the assigned task.
 - Assign the work within the group to achieve the task within stipulated time period

8. Assessment Tools

1.	Problem Definition	
	<p>The following data is given for the Francis turbine. Net head $H=70\text{m}$; Speed $N=600\text{rpm}$; Shaft power=367.875kW; $\eta_0=85\%$; $\eta_h=95\%$; flowratio=0.25; breadthratio=0.1; outer diameter of the runner = $2 \times$ inner diameter of the runner. The thickness of the vanes occupies 10% of circumferential area of the runner, the velocity of flow is constant at inlet and outlet and discharge is Radial at outlet. Calculate</p> <p>i) Guide blade angle ii) Runner vane angles at inlet and outlet iii) Diameter of runner at inlet and outlet iv) Width of wheel at inlet.</p>	
2.	Think	
	On your own, write the procedure to solve the problem given above.	4M
3.	Pair	
	Discuss your procedure to solve the above problem with a partner. Put a check by any procedure, above, that your partner also wrote down. Then, write down procedure your partner had that you did not have:	3M
4.	Share	
	Share: Review all of your procedure and circle the one you think is most important. One of you will share this procedure with the whole group. As you listen to the procedure of the whole group, write down the most appropriate procedure to solve the problems	3M

9. Evaluation sheet of attendee

Roll No.	Name of students	Score out of 10
03	Prerana Aher	05
04	Shubham Ahire	07
06	Krishna Ambekar	05
09	Prasad Avhad	07
10	Parag Badge	07
11	Priya Bairagi	07

12	Siddhi Baviskar	05
13	Yash Bhalekar	07
22	Tejas Brahmankar	07
27	Pratik Chaudhary	05
29	Rutuja Chavan	05
30	Yash Chopada	07
31	Saurabh Dangre	04
34	Prathamesh Deshmukh	07
35	Sachin Dhanait	04
39	Shrikant Gaikwad	03
41	Sachin Gholve	03
42	Sushant Harak	07
45	Aniruddha Jadhav	03
47	Trupti Jadhav	03
52	Sandesh Kadam	05
53	Satish Kale	03
61	Om Mahatme	07
81	Madhura Mogal	04
83	Jagruti More	05
84	Prathamesh More	06
86	Sanket Nakil	03
89	Ajinkya Pagar	04
91	Piyush Parkhal	03
99	Saurabh Patil	04
100	Shubham Patil	05
101	Soham Patil	05
102	Vaibhavi Patil	05
103	Vishesh Patil	06
107	Karan Pund	00
110	Aditya Ranade	06
111	Nilesh Ravtale	07

115	Gaurav Sanap	06
116	Vivek Sangale	08
118	Rishikesh Sawant	06
122	Karan Shinde	06
123	Rohit Shinde	07
125	Ujwala Shinde	05
126	Pragati Shingote	05
127	Rohit Shirode	05
128	Priyanka Shirsat	05
131	Abhishek Thakare	05
132	Anjali Thakare	07
133	Adarsh Thakur	05
135	Vinay Thete	07
136	Nikita Thok	07
138	Samyak Vaidya	06
143	Akshay Zope	06

10. For review and critique contact: e-mail address of faculty and HOD

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