## 1. Availability of work on the Institute Website

The following are the teaching and learning strategies implemented by the faculty.

The innovation in content delivery by faculty is shown in Table 1.

**Table 1. Innovation in Content Delivery by Faculty**

| NAME OF THE FACULTY | INNOVATION | IMPLEMENTATION DETAILS | IMPACT |
|---|---|---|---|
| Dr. M. Dilip Kumar | Think Pair Share | 1. Before conducting the activity conduct a surprise test to solve one question individually. | 1. Students are actively engaged in learning process. |
| | | 2. In Class of 60,30 pairs are formed and questions were distributed | 2. Students able to learn and identify relevant information and apply to procedure of a problem. |
| | | 3. Assign one student as a problem solver and another listener. | |
| | | 4. For the next question, interchange the roles of the Student. | 3. Students can learn and practice problem-solving strategies. |
| | | 5. Again conduct atest, after questions are Interchanged. | |
| Dr. T. Bhargava Ramu | In Class Teams | 1. Students shouldhave prior Knowledge about the topic. | 1. Students share knowledge with peers. |
| | | 2. Students are divided into heterogeneous groups. | 2. More ideas are represented and noted on notice Board |
| | | 3.Each group isassigned the sametopic. | 3. Students will |

| | | | |
|---|---|---|---|
| | | 4..Multiple groupswill talk on the same topic | improve his interpersonal skills |
| M. Sreenivasa Reddy | Collaborative Learning | 1. Dividing students into 6 person jigsaw groups. | 1.Students can develop high level thinking skills |
| | | 2. The topic isdivided into 3 different segments | 2. Exposure to and an increase in understanding the topic in different perspectives. |
| | | 3. Assigned each segment to twostudents in a group. | 3. Enhance learning of the topics at rapid pace and also retain for longer periods. |
| | | 4.Form temporary groups by havingtwo students fromeach jigsaw toothers assigned to the same group. | |
| | | 5. After comingback to their respective groups, ask each studentto explain their segment to the group. | |
| Mrs.A.Shubhangi | Flipped | 1. Before conducting this activity, first sharea video link to the students about the topic. | 1. Improves self-learning ability of the student. |
| | | 2. Each student is given a topic in the class and asks them to write about the topic. | |

| | | | |
|---|---|---|---|
| Rao | Classroom | 3. After completed writing, collect papers and discuss the answers. | 2. Students will learn at their own pace, and this helps in retaining conceptsfor a longer period. |
| | | 4. Correct papers of all students. | |
| Ch. Srivardhan Kumar | Group Writing Assignments | 1. Out of 57 students, 19 groups areformed, and each group consists of 3 members. | 1. Students can share knowledge with their peers. |
| | | 2. Students should bring text books or material that is required for the activity. Every group is assigned with a different topic. | 2. Students can learn new points about the topic. |
| | | 3. Students should discuss among their groups. | |
| | | 4. Students should also write about the topic on the paper. | 3. Students can analyze the topic after the activity. |
| K. Rajasri | Think Pair Share | 1.Before conducting the activity conduct a surprise test to solve one question individually. | 1. Students are actively engaged inthe learning process. |
| | | 2. In class of 50,25 pairs are formed and questions were distributed to eachpair. | 2. Students can able to learn and identify relevant information and apply to procedure of a problem. |
| | | 2. Assign one student as a problem solver and other listener. | |

| | | | |
|---|---|---|---|
| | | 3. For next question, interchange the roles of the student. | 3. Students to learnand practice problem-solving strategies. |
| | | 5. Again conduct a test, after questions are interchanged. | |
| T. Mrudula | In Class Teams | 1. Students should have prior knowledge about the topic. | 1. Students share knowledge with peers. |
| | | 2. Students are divided into heterogeneous group. | 2. More ideas are represented and noted on notice board |
| | | 3. Each group is assigned the sametopic. | 3. Students will improve his interpersonal skills |
| | | 4. Multiple groups will talk on the same topic | |
| Mr. N. Karthik | Collaborative Learning | 1. Dividing students into 6 person jigsaw groups. | 1.Students can develop high level thinking skills |
| | | 2. The topic isdivided into 4 segments. | 2. Exposure to and an increase in understanding the topic in different perspectives. |
| | | 3. Assigned eachsegment to twostudents in a group. | 3. Enhance learning of the topics at rapid pace and also |
| | | 4. Form temporary groupsby having two students from each jigsaw toothers assignedto the same group. | |

| | | | |
|---|---|---|---|
| | | 5. After coming back to their respective groups, ask each student to explain their segment to the group. | retain for longer period. |
| Mr. P. Jithender | Flipped Classroom | 1. Before conducting this activity, first share prior material to the students about the topic. | 1. Improves self-learning ability of the student. |
| | | 2. Each student is assigned a topic in the class and asks them to write about the topic. | |
| | | 3.After completed writing, collect papers and discuss the answers. | 2. Students will learn at their own pace. |
| | | 4. Correct papers of all students. | 3. Students can remember the concepts for a longer period of time. |
| | | 1. Out of 50 students, 10 groups are formed and each group consists of 5 members. | 1. Students can share knowledge with their peers. |

| | | | |
|---|---|---|---|
| Mr. A. Yadagiri | Group Writing | 2. Students should bring text books or material that is required for the activity. Every group is assigned with different topic | 2. Students can learn new points about the topic. |
| | | 3. Students should discuss among their groups. | 3. Students can analyze the topic after the activity. |
| | | 4. Students should also write about the topic on the paper. | |
| Dr.A.Sudhakar | Kahoot Quiz | 1. All Students can participate in kahoot quiz freegame-based learning platform. | Engage students for more immersive learning. |
| | | 2. Students should login with a PIN number given by faculty. | |
| | | 3. Each question carries 2 or 4 options, students have to select any one option among them. | |

| | | | |
|---|---|---|---|
| | | 4. End of the quiz 1,2 and 3 winners will be displayed on the screen along with winners scores. | |

## 1.1. Think Aloud Pair Problem Solving (TAPPS)

**Standard Operating Procedure (SOP)**

**Introduction:**

Many educators today agree that students learn more in an active learning environment than they do in a passive learning environment. Active Learning is a process wherein students are actively engaged in building understanding of facts, ideas, and skills through the completion of instructor directed tasks and activities. It is any type of activity that gets students involved in the learning process. While strong conceptual understanding is important in solving analytical problems, it is also essential for the students to learn how to use their knowledge effectively in solving problems. Thinking aloud pair problem solving, which was first developed by Arthur Whimbey, aims to better understand thinking among the students (Whimbey& Lochhead, 1999) and to develop students' cognitive processes associated with problem solving. As the name suggests, this involves students working in pairs. One student (the problem solver) is required to read the problem aloud and think aloud during the problem solving process, which includes verbalizing everything they are thinking and doing. Another student (the listener) attends to the problem solver's thinking and reminds him/ her to keep saying aloud what he or she is thinking or doing, while also asking for clarifications and pointing out errors being made.

**Objective:**

1. To provide opportunities for students to meaningfully talk and listen, write, read, and reflect on the content and ideas.
2. To have students actively engage in the learning process.
3. To have students learn to identify relevant information and apply it in the solutionof a problem.
4. To have students learn and practice problem-solving strategies.

If students' conceptual understanding were weak to start with, the problem solving strategy would not help much during the exercise If students' conceptual understanding were weak to start with, the problem solving strategy would not help much during the exercise.

**Procedure:**

1. Before conducting the activity, conduct a surprise test, where students have to solve one question individually. Make a note of the scores.

2. Class of thirty students is best suited for the activity. 15 pairs are formed. It is suggested to have one good student paired with a dull student based on the scores of the surprise test. Prepare a minimum of 4 different sets of concept oriented analytical questions.
3. One student (the problem solver) is required to read the problem and think aloud during the problem solving process. Another student (the listener) attends to the problem solver's thinking and reminds him/her to keep saying aloud what he/she is thinking or doing, while also asking for clarifications and pointing out errors being made (if any).
4. For the next question the roles should be interchanged and the activity be performed. The questions can be rotated among the pairs. Altogether eachstudent needs to solve two questions.
5. Again conduct the test where the questions can be interchanged, but the studentshave to take the test individually. Compare the marks obtained before the activityand after the activity.

### 1.2. Schematic representation of the TAPPS activity

**Assessment:**

Measuring students' scores both before and after completing an activity is one way to assess effectiveness of the activity.

1. Prepare a comparative sheet of marks scored by the students before and after the activity as shown in Table 2.

**Table 2. Number of students improvement, No change,Negative change**

| Roll No. | Score before the Activity | Score after the Activity | Improvement/No change/ negative change |
|---|---|---|---|
| 20R21A0201 | 5 | 8 | Improvement |
| 20R21A0203 | 4 | 4 | No change |
| 20R21A0204 | 6 | 5 | negative change |

2. Prepare a bar chart indicating no. of students showing improvement, No change, Negative change as shown in Figure 1.

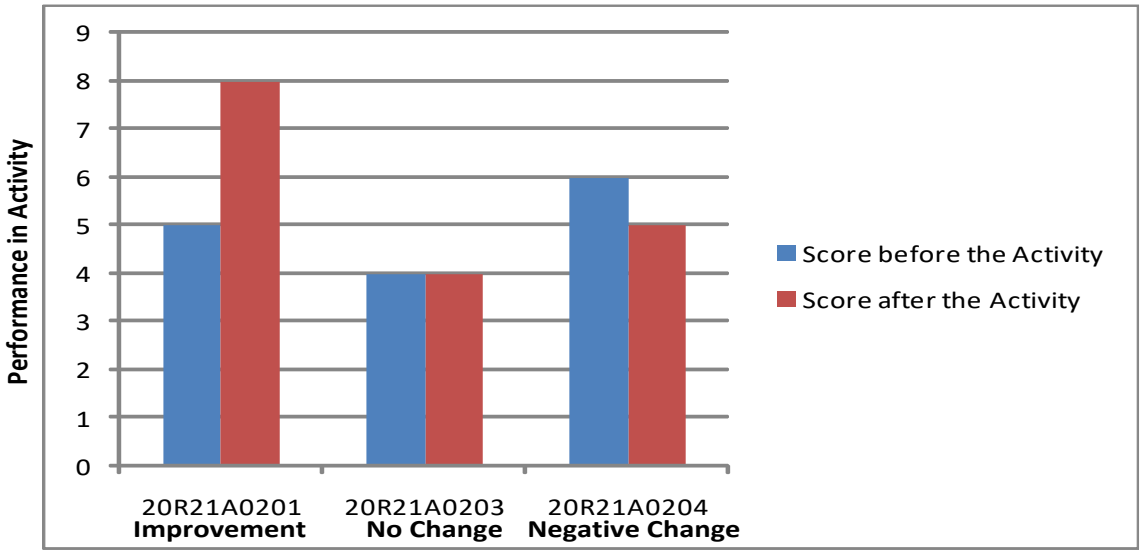



**Figure 1. Bar chart indicating no. of students showing improvement, No change, Negative change**

3. If more than 60% of the students have shown improvement then the activity is assumed to be successful and completed. If 50-60% of students have shown improvement then the activity is assumed to be partially completed and revision is recommended. In these cases you can claim a full variable amount. If less than 50% of students have shown improvement then faculty loses the variable pay amount.

**Expected Outcome(s):**

1. Students have actively engaged in the learning process.
2. Students can learn to identify relevant information and apply it in the solution of aproblem.
3. Students to learn and practice problem-solving strategies

**Enclosures:**

1. Photograph of activity being conducted.
2. Comparative marks sheet.
3. Analysis report.
4. Question paper.

The activity on Think Aloud Pair Problem Solving is shown in Figure 2.

**Figure 2. Activity on Think Aloud Pair Problem Solving**

The Objective, execution plan and expected outcomes of Activity on Think Aloud Pair Problem Solving is shown in Figure 3.

MARRI LAXMAN REDDY GROUP OF INSTITUTIONS

**MLR Institute of Technology**

Laxman Reddy Avenue, Dundigal, Quthbullapur (M), Hyderabad – 500 043

| | | |
|---|---|---|
| **Name of the Faculty: Dr. M. Dilip Kumar** | **Designation: Assoc. Prof.** | **Subject: Power System Operation and Control** |
| **Year/Semester: IV/I** | **Section: ----** | **Topic: Load Curves** |
| **Name of the Activity: TAPPS** | **Date: 10-08-2022** | **No. of Students attended: 25** |

**Objective of the Activity:**

1. To provide the opportunities for students to meaningfully talk and listen, write, read and reflect on the content and ideas.

2. To have students actively engage in the learning process.

3. To have students learn to identify relevant information and apply it in the solution of a problem.

4. To have students learn and practice problem-solving strategies.

**Execution Plan:**

1. Before conducting an activity conduct a surprise test, where students have to solve one equation individually. Make a note of the scores.

2. Class of thirty students is best suited for the activity. 15 pairs are formed. It is suggested to have one good student paired with a dull student based on the scores of the surprise test. Prepare minimum 4 different set of concept oriented analytical questions.

3. One student (the problem solver) is required to read the problem and think aloud during the problem solving process. Another student (the listener) attends so the problem solver's thinking and reminds him/her to keep saying aloud what he/she is thinking or doing, while also asking for clarifications and pointing out errors being made (if any).

4. For the next question, the roles should be interchanged and the activity be performed. The questions can be rotated among the pairs. Altogether each student needs to solve two questions.

5. Again conduct the test where the questions can be interchanged, but the students have to take the test individually. Compare the marks obtained before the activity and after the activity.

**Expected Outcomes:**

1. Students to have actively engaged in the learning process.

2. Students to learn to identify relevant information and apply it in the solution of a problem.

3. Students to learn and practice problem-solving strategies.

**Enclosures: Video of the activity/ Photos/ activity related material**

**Template for Student Feedback: feedback of the students on the activity.**

**Figure 3. Objective, execution plan and expected outcomes of Activity on Think Aloud Pair Problem Solving**

## 1.2. In-Class Teams

**Standard Operating Procedure (SOP)**

**Introduction:**

Active learning is anything course-related that all students in a class session are required to do, other than simply watching, listening and taking notes. Active Learning shifts focus from what the instructor should deliver to what the students should be able to do Compared to students taught traditionally, students taught in a manner that in corporate small-group learning achieve higher grades, learn at a deeper level, retain information longer are less likely to drop out of school, acquire greater communication and teamwork skills, and gain a better understanding of the environment in which they will be working as professionals.

**Objectives:**

- To encourage teamwork.
- To promote peer learning.
- Retention of concepts for a longer period of time.

**Procedure:**

- Faculty should summarize the prior material
- Team size should be 4-7
- Faculty should form heterogeneous groups of students
- The activity should be conducted for not more than 20 minutes
- The activity can be solving a problem, brainstorming a list, justifying a statement based on the prior knowledge and peer interaction.
- Faculty should facilitate the activity
- Summarize the activity and eliminate any misconceptions.

**Assessment:**

- Assessment is carried out using peer evaluation.
- If 70% of the groups have completed the task successfully, the activity can be considered as successful.
- Upon failure the faculty must identify the reasons for failure and take up corrective measures.

**Expected Outcomes:**

- Improves interpersonal skills.
- Promotes peer learning.
- Effective engagement of class.
- Measurable performance.

The activity on In-class Teams is shown in Figure 4.

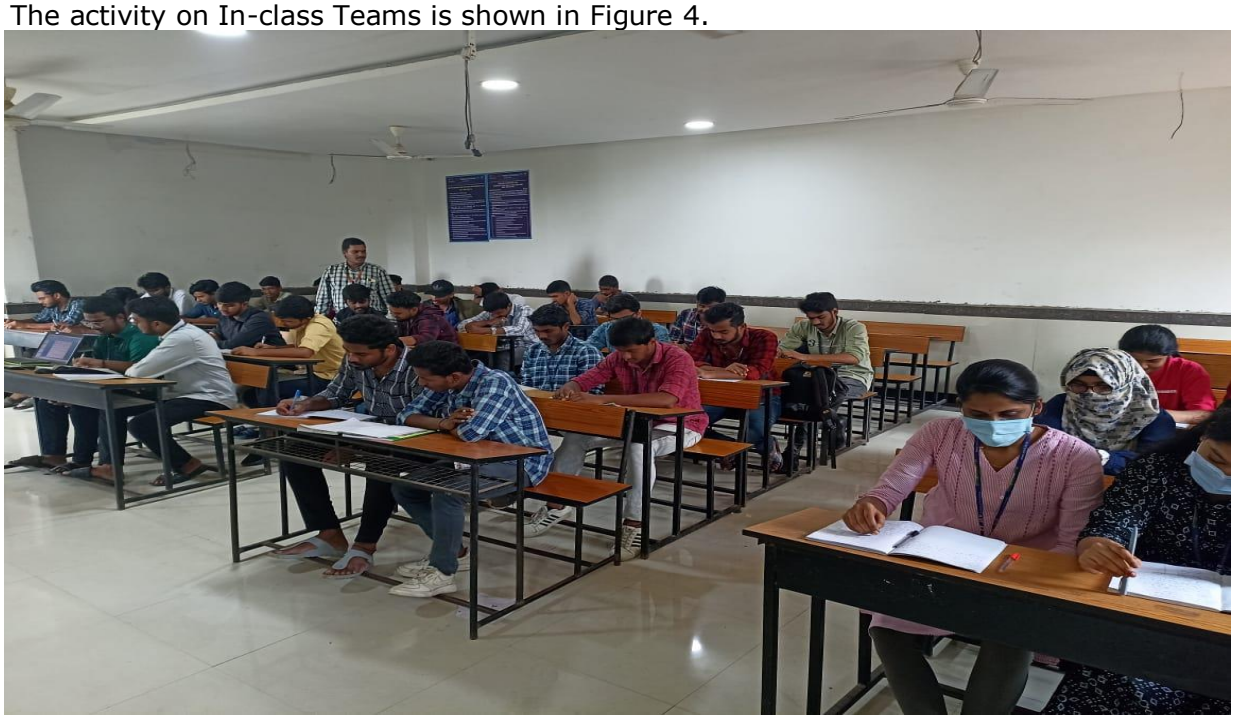
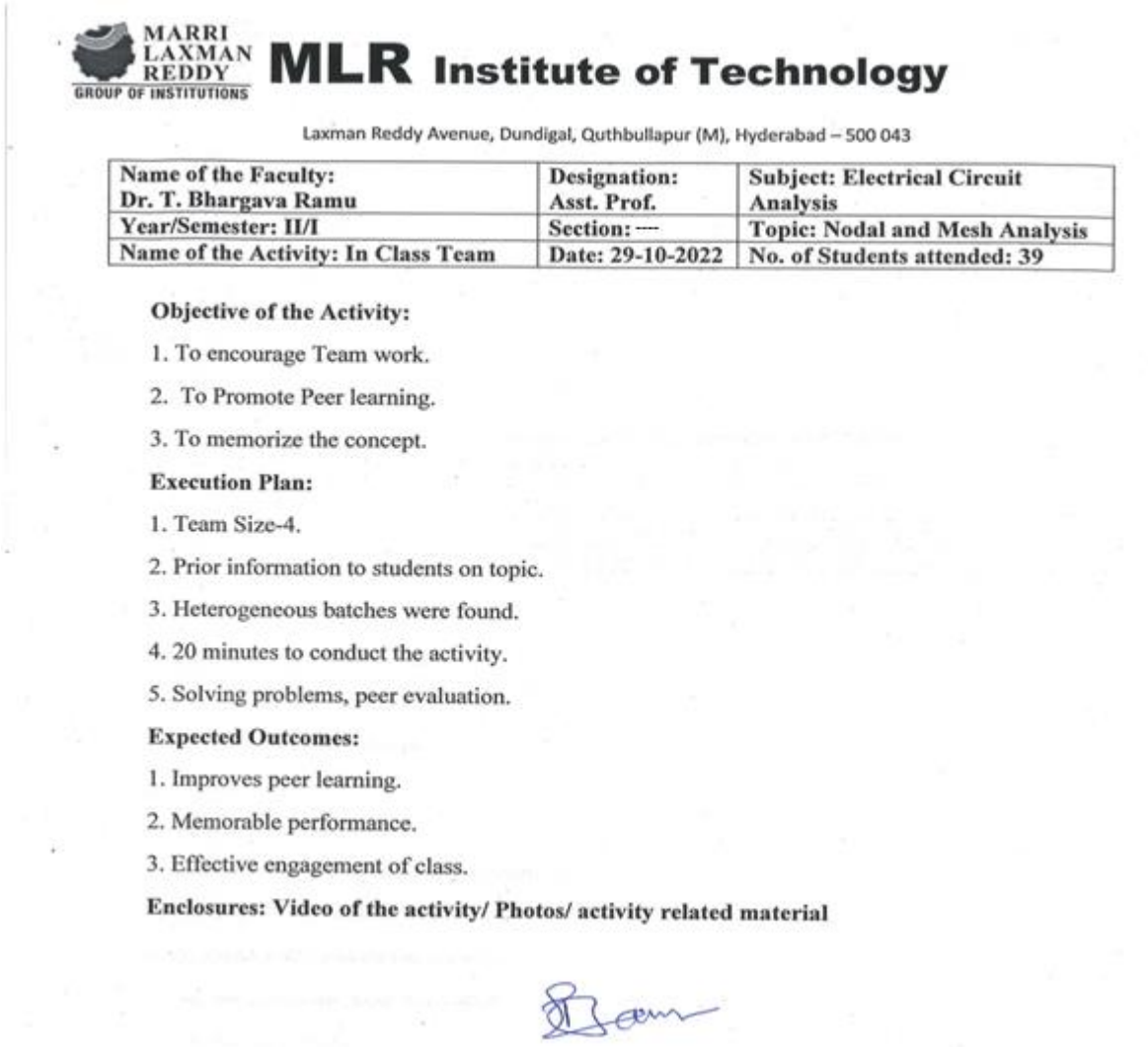


**Figure 4. Activity on In-class Teams**

The Objective, execution plan and expected outcomes of Activity on Think Aloud Pair Problem Solving is shown in Figure 5.



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Laxman Reddy Avenue, Dundigal, Quthbullapur (M), Hyderabad – 500 043

| | | |
|---|---|---|
| **Name of the Faculty: Dr. T. Bhargava Ramu** | **Designation: Asst. Prof.** | **Subject: Electrical Circuit Analysis** |
| **Year/Semester: II/I** | **Section: ---** | **Topic: Nodal and Mesh Analysis** |
| **Name of the Activity: In Class Team** | **Date: 29-10-2022** | **No. of Students attended: 39** |

**Objective of the Activity:**

1. To encourage Team work.
2. To Promote Peer learning.
3. To memorize the concept.

**Execution Plan:**

1. Team Size-4.
2. Prior information to students on topic.
3. Heterogeneous batches were found.
4. 20 minutes to conduct the activity.
5. Solving problems, peer evaluation.

**Expected Outcomes:**

1. Improves peer learning.
2. Memorable performance.
3. Effective engagement of class.

**Enclosures: Video of the activity/ Photos/ activity related material**

**Figure 5. Activity on In-class Teams**

## 1.3. Collaborative Learning

**Standard Operating Procedure (SOP)**

**Introduction:**

Collaborative Learning is a relationship among learners that requires positive interdependence (a sense of sink or swim together), individual accountability (each of us has to contribute and learn), interpersonal skills (communication, trust, leadership, decision making, and conflict resolution), face-to-face primitive interaction, and processing (reflecting on how well the team is functioning and how to function even better).

**Objectives:**

Collaborative learning is an instructional method in which students team together on an assignment. In this method, students can produce the individual parts of a larger assignment individually and then "assemble" the final work together, as a team. Whether for a semester-long project with several outcomes or a single question during class,

collaborative learning can vary greatly in scope and objectives. Cooperative learning, sometimes confused with collaborative learning, describes a method where students work together in small groups on a structured activity. Students are individually accountable for their work but also for the work of the group as a whole, and both works are assessed. The objectives of the activity on Collaborative learning are as follows:

- To enhance problem solving, creativity and thinking skills in students.
- To understand team-based learning as an approach to collaborative learning
- To make students understand complex concepts.
- To develop oral communication skills, Fosters and develops interpersonal relationships.

There are many collaborative techniques which include think-pair-share, jigsaw, etc.

**Procedure to conduct Think-Pair-Share:**

Think-pair-share (TPS) is a collaborative learning strategy in which students work together to solve a problem or answer a question about an assigned reading. This technique requires students to

- **Think:** Teachers begin by asking a specific higher-level question about the topic to the students. Students "think" about what they know or have learned about the topic for a given amount of time (usually 1-3 minutes).
- **Pair:** Each student should be paired with another student. Teachers may choose whether to assign pairs or let students pick their own partner. Students share their thinking with their partner, discuss ideas, and ask questions of their partner about their thoughts on the topic (2-5 minutes).
- **Share:** Once partners have had ample time to share their thoughts and have a discussion, teachers expand the "share" into a whole-class discussion. Allow each group to choose who will present their thoughts, ideas, and questions they had tothe rest of the class.

**<u>Procedure to conduct Jigsaw Activity:</u>**

- Divide students into 5 or 6 persons jigsaw groups.
- Divide the day's lesson into 5-6 segments.
- Assign each student to learn one segment.
- Give students time to read over their segment at least twice and become familiar
- Form temporary "expert groups" by having one student from each jigsaw groupjoin other students assigned to the same segment.
- Bring the students back into their jigsaw groups.
- Ask each student to present her or his segment to the group.
- Float from group to group, observing the process.
- At the end of the session, give a quiz on the material.

The Activity on Collaborative learning is shown in Figure 6.

**Figure 6. Activity on Collaborative learning**

The Objective, execution plan and expected outcomes of Activity on collaborative learning is shown in Figure 7.

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| | | |
|---|---|---|
| **Name of the Faculty: M. Sreenivasa Reddy** | **Designation: Assoc. Prof.** | **Subject: Electrical Machines-1** |
| **Year/Semester: II/I** | **Section: ---** | **Topic: DC Generators** |
| **Name of the Activity: Collaborative Learning** | **Date: 24-07-2019** | **No. of Students attended: 24** |

**Objective of the Activity:**

1. To motivate the students for becoming more effective by making them understanding the concepts related to core application development.

2. To make them improve their critical thinking skills.

**Execution Plan:**

1. Formed group of 4 to 6 students into a team.

2. Instructed to think, understand and design the problem given by discussion among the groups.

**Expected Outcomes:**

1. Expected to improve their thinking skills.

**Enclosures: Video of the activity/ Photos/ activity related material**

Sreenivasa Reddy.

**Figure 7. Activity on Collaborative learning**

## 1.4. Flipped Classroom

### Standard Operating Procedure (SOP)

**Introduction:**

Instructional environments that allow for students to be more actively engaged with course material are more likely to lead to greater learning gains. The literature in engineering and science education continues to encourage faculty and instructors to use class exercises that require students to be actively engaged in the course material, as opposed to being passive recipients of information.

Engineering students benefit from an active and interactive classroom environment where they can be guided through the problem solving process. Typically faculty members spend class time presenting the technical content required to solve problems, leaving students toapply this knowledge and problem solve on their own at home. There has recently been a surge of the flipped, or inverted, classroom where the technical content is delivered via online videos before class. Students then come to class prepared to actively apply this knowledge to solve problems or do other activities. In this activity, recommendations are made for applying this educational technique to large engineering classrooms. [The Evolution of a Flipped Classroom: Evidence-Based Recommendations by

STEPHANIE BUTLER VELEGOL SARAH E. ZAPPE AND EMILY MAHONEY Pennsylvania State University, University Park, PA] F-Flexible Environment, L-Learning culture, I-Intentional content, P- Professional Educator. [IUCEE-IIEECP]

**Objective:**

1. To motivate students to learn concepts on their own.
2. To aid students obtain timely information (via preliminary assessments) about their learning before class and thereby adapting learning style.
3. Students come to the class with prior knowledge of the concepts and these concepts are reinforced in the class by solving some logical and critical thinking problems based on the topic.
4. Ensures long lasting retention of the concepts.

**Procedure:**

1. Provide students with the learning material - video link (handouts/video lectures/text book reference pages etc) of the topic to be covered through websites (edmodo, canvas, Google classroom etc). Give students 2 to 3 days time to go through the link, and ask them to take notes.
2. On the day of the implementation (assessing the flipped class), students can be given a task of solving problems based on the learning material shared with them. Make sure the problems should be such that the student must apply the knowledge gained from learning material / video lecture to solve the problem. Prepare as many questions as possible so that no adjacent student should get the same question.
3. Role of the faculty is to facilitate the activity.
4. Based on the complexity of the task, the duration can be ideally set to 15 to 20 minutes
5. Faculty should collect the papers from the students.
6. Faculty should summarize the topic/concept and can also give answers to the questions.
7. Faculty should correct these papers (not in the classroom) and give constructive feedback.

**Assessment:** The success of the flipped classroom activity depends on two parameters.

1. Number of students attended the video lecture/gone through the learning material before coming to the class. Faculty should ensure maximum students come prepared to the class otherwise it will be very tough to handle the class.
2. Percentage of students who have completed the task successfully reflects the success rate of the activity.
3. Assessment Metrics: At least 80 % students must take part in the pre class activity i.e. video lecture / learning material etc. and at least 65% of students must be able to complete the task successfully.
4. Student feedback on the activity is a must.

**Expected Outcomes:**

1. Confidence levels of students will improve, when they solve a problem or complete a task on their own without the help of the faculty.
2. Improves self learning ability of the students.
3. Students will learn at their own pace and helps in retaining concepts for a longer period of time.

**Enclosures:**

1. Attendance proof (Photograph) of the students matching the attendance register.
2. Copy of learning material shared in advance with students and web link if the learningmaterial is a video.
3. Student feedback

The activity on flip class rooms is shown in Figure 8.

**Figure 8. Activity on Flipped class Room**

The Objective, execution plan and expected outcomes of Activity on flipped class rooms is shown in Figure 9.

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| | | |
|---|---|---|
| **Name of the Faculty: A.Shubhangi Rao** | **Designation: Asst. Prof.** | **Subject: Smart Grid Technologies** |
| **Year/Semester: IV/II** | **Section: ----** | **Topic: Smart Grid Architectures** |
| **Name of the Activity: Flipped Classroom** | **Date:29-03-2023** | **No. of Students attended: 27** |

**Objective of the Activity:**

1. To motivate the students to learn concepts on their own.
2. To aid students obtain timely information (via preliminary assessments) about their learning before class and thereby adapt learning style.
3. Students come to the class with prior knowledge of the concepts and these concepts are reinforced in the class by solving some logical and critical thinking problems based on the topic.
4. Ensures long lasting retention of the concepts.

**Execution Plan:**

1. Provide student with the learning material-video link (handouts/video lectures/text book reference pages etc) of the topic to be covered through website (canvas. Google classroom etc). Give students 2 to 3 days time to go through the link, ask them to take notes.
2. On the day of the implementation (assessing the flipped class), students can be given a task of solving problems based on the learning material shared with them. Make sure the problem should be such that the student must apply the knowledge gained from learning material/video lecture to solve the problem. Prepare as many questions as possible so that no adjacent student should get the same question.
3. Role of the faculty is to facilitate the activity.
4. Based on the complexity of the task, the duration can be ideally set to 15 to 20 minutes.
5. Faculty should collect the papers from the students.
6. Faculty should summarize the topic/concept and can also give answers to the questions.
7. Faculty should correct these papers (not in the class room) and give constructive feedback.

**Expected Outcomes:**

1. Confidence levels of students will improve, when they solve a problem or complete a task on their own without the help of the faculty.
2. Improves self learning ability of the students.
3. Students will learn at their own pace and helps in retaining concepts for a longer period of time.

**Enclosures: Video of the activity/Photos/activity related material**

**Figure 9. Activity on Flipped class Room**

## 1.5. Group/Collaborative Writing Assignments

### Standard Operating Procedure (SOP)

**Introduction:**

In general, the teacher provides the students with an assignment and the students submit the assignment answers in learning process. The teacher then corrects the assignment and assesses it. Whereas group writing assignments were given to students for the purpose of producing an Authenticated document.

In the academic world, all of us are likely to participate in some form of group writing an undergraduate group project for a class or a collaborative/group research paper. Writing in a group can have many benefits: multiple brains are better than one, both for generating ideas and for getting a job done. However, working in a group can sometimes be stressful because there are various opinions and writing styles to incorporate into one final product that pleases everyone. This handout will offer an overview of the collaborative process, strategies for writing successfully together, and tips for avoiding common pitfalls. It will also include links to some other handouts that may be especially helpful as your group moves through the writing process.

**Objective:**

- Students will gain opportunities to collaborate effectively.
- Students have opportunities to see how other students view the same topic.
- Use assignments that have an authentic purpose and audience such as creating Wikipediaentries or study guides for the course.
- An assignment with an authentic purpose and audience can increase students interest and commitment

**Procedure:**

1. Before conducting the Activity Instruct the students about the rules and importance of Group Writing Assignments.
2. This activity is best suited for 30 student's i.e. 10 groups and each group comprises 3 students. However it can be conducted for a class with 60 students.
3. Divide students into small groups (Maximum of four), Inform the student groups to bring textbooks/journals/handouts required for writing Assignment.
4. After giving Assignment topics (probably different topics to different groups), ask the student groups to brainstorm and decide their roles (like who is writing and who is collecting info from books etc.)
5. These assignment questions should be of Bloom's Taxonomy higher order verbs.
6. Instruct them to write precise information about the topic. And we will use this as a study material for the class.

**Here we outline the steps of the collaborative process. You can use these questions to focus your thinking at each stage.**

**1. Pre-writing process**

a. Share ideas and brainstorm together.
b. Formulate a draft thesis or argument.
c. Think about your assignment and the final product. What should it look like?What is its purpose? Who is the intended audience?

**2. Planning and logistics**

a. Decide together who will write which parts of the paper/project.
b. What will the final product look like?
c. Arrange meetings: How often will the group or subsets of the group meet? When and where will the group meet? If the group doesn't meet in person, how willinformation be shared?
d. Scheduling: What is the deadline for the final product? What are the deadlines for drafts?

**3. Research/data collection**

a. How will the group find appropriate sources (books, journal articles, newspaper articles, visual media, trustworthy websites, interviews)? If the group will be creating data by conducting research, how will that process work?
b. Who will read and process the information found? This task again may be done by all members or divided up amongst members so that each person becomes the expert in one area and then teaches the rest of the group.
c. Think critically about the sources and their contributions to your topic. Which evidence should you include or exclude? Do you need more sources?
d. Analyze the data. How will you interpret your findings? What is the best way to present any relevant information to your readers-should you include pictures, graphs, tables, and charts, or just written text?

**4. Drafting/writing**

a. Separately (each group member has his/her own portion of writing to do)

i. Note that brainstorming the main points of your paper as a group is helpful, even if separate parts of the writing are assigned to individuals. You'll want to be sure that everyone agrees on the central ideas.

ii. Where does your individual writing fit into the whole document?

b. Together (the group actually meets to compose text collaboratively)

i. Writing together may not be feasible for longer assignments or papers with coauthors at different universities, and it can be time-consuming. However, writing together does ensure that the finished document has one cohesive voice.

ii. Talk about how the writing session should go BEFORE you get started. What goals do you have? How will you approach the writing task at hand?

iii. Many people find it helpful to get all of the ideas down on paper in a rough form before discussing exact phrasing.

iv. Remember that everyone has a different writing style! The most important thing is that your sentences be clear to readers.

**5. Revising, editing, and proofreading**

a. If your group has drafted parts of the document separately, merge your ideas together into a single document first, then focus on meshing the styles. The first concern is to create a coherent product with a logical flow of ideas. Then the stylistic differences of the individual portions must be smoothed over.

b. Revise the ideas and structure of the paper before worrying about smaller, sentence-level errors (like problems with punctuation, grammar, or word choice). Is the argument clear? Is the evidence presented in a logical order? Do the transitions connect the ideas effectively?

c. Proofreading: Check for typos, spelling errors, punctuation problems, formatting issues, and grammatical mistakes. Reading the paper aloud is a very helpful strategy at this point.

**Assessment:**

Measuring students scores both before and after completing an activity is one way to assess effectiveness of the activity

1. Prepare a comparative sheet of marks scored by the students both before and after the activity

2. Prepare a pie-chart including no. of students showing improvement, No change, Negative change

The pie-chart including no. of students showing improvement, No change, Negative change is shown in Figure 10.

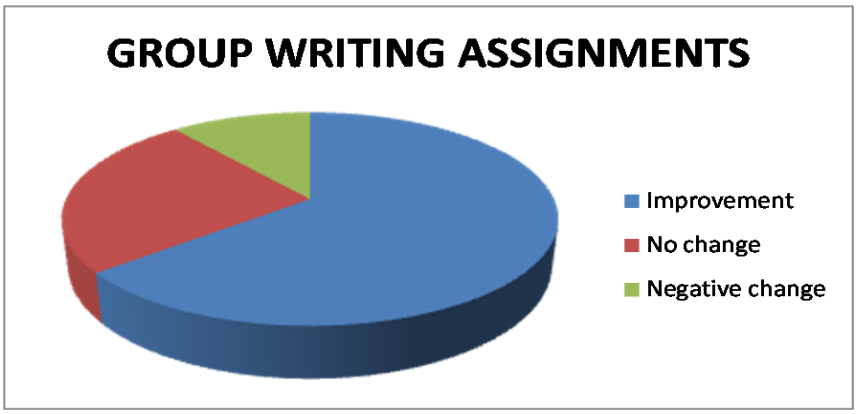


**Figure 10. Group Writing Assignments**

3. If more than 60% of students have shown improvement then the activity is assumed to be successful and completed. If 50-60% of students have shown improvement then the activity is partially completed and revision is recommended. In these cases you can claim a full variable pay amount. if less than 50% of students have shown improvement then faculty loses the variable pay amount.

The group/collaborative writing assignments are shown in Figure 11.

**Figure 11. Group/Collaborative Writing Assignments**

The Objective, execution plan and expected outcomes of Activity on Group writing assignment is shown in Figure 12.

MARRI LAXMAN REDDY GROUP OF INSTITUTIONS

**MLR Institute of Technology**

Laxman Reddy Avenue, Dundigal, Quthbullapur (M), Hyderabad – 500 043

| Name of the Faculty: Ch. Srivardhan Kumar | Designation: Asst. Prof. | Subject: Linear Control Systems |
|---|---|---|
| Year/Semester: II/II | Section: --- | Topic: Block Diagram Reduction |
| Name of the Activity: Group Writing | Date: 20-04-2023 | No. of Students attended: 53 |

**Objective of the Activity:**

1. Students will gain opportunities to collaborate effectively.
2. Assignments with authentic purpose increases student's interest.

**Execution Plan:**

1. Dividing Students into groups and provide assignments.
2. Should provide precise information.

**Expected Outcomes:**

1. Students learn and practices problem solving strategies.
2. Actively engaged in learning process.

**Enclosures: Video of the activity/Photos/activity related material**

**Figure 12. Activity on Group writing Assignment**