



MALINENI LAKSHMAIAH WOMEN'S ENGINEERING COLLEGE

(Approved by AICTE, Affiliated to JNTUK)

Pulladigunta (Village), Vatticherukuru (Mandal),

Guntur-522017, Andhra Pradesh, India

Department of Computer Science and Engineering

TEACHING AND LEARNING METHODOLOGIES

The contributions of CSE Department Faculty to instilling novel teaching and learning approaches are clearly outlined in our Department Records as well as on the Institute Website for peer review and critique. Our work is available to be improved or replicated. The following are some of our inclusive methods:

| S.No | Innovation Method | Mode of Teaching / Learning Process | Objective |
|------|-----------------------------------|---|--|
| 1. | Multi-Media Learning (ICT) | Demonstration of topics using software tools in real time | Students' general comprehension is improved, and the teachers are able to convey their teachings in a more dynamic manner. |
| 2. | WIT& WIL | Presentation | The respective faculty promotes students' awareness and emphasizes the importance of the appropriate subject or laboratory |
| 3. | Each one & Teach one | Presentation | Good for improving the presentation skills of students Improvement to broad their subject knowledge. |
| 4. | E- Learning | NPTEL/COURSERA | Improve engineering education quality, on-tip compatibility, and resources for outside the curriculum |
| 5. | Assignment Practices | Analyze & Preparation | Improves the cognitive abilities. |



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1. Multi-Media Learning:

In this Method, the teacher will use digital tools to communicate some ideas. These learning aids are necessary for the transmission of subject knowledge. The major points of the presentation are easily identifiable by students. A live presentation in the classroom can be an effective way to communicate material and encourage student learning. Multimedia is a powerful teaching tool that combines fundamental types of media such as text, audio, video, and images into a learning environment. As a result, the students are better able to concentrate on the subjects. It also helps students think more clearly and analyse concepts.

Multi Media Learning Benefits:

1. Deeper Understanding
2. Problem-solving abilities have improved
3. Increased Positive emotions
4. World exploration

2. WIT & WIL:

Only when engineering education is more relevant to the dynamics of today's world, society, industry, economy, and environment can it have an impact. Technical education is no longer merely a qualifiable fascination; the world needs to be able to quantify how engineering knowledge is used. MLWEC has long been influenced by the notion of outcome-based education, and as a result, has developed a number of internal processes and methodologies to ensure that the Institute's graduates embody the reinvigorated spirit of modern engineering education.

WIT & WIL, which stands for "**Why am I Teaching What I'm Teaching**" from the teacher's perspective and "**Why am I Learning What I'm Learning**" from the student's perspective, is one such initiative that has been integrated into the teaching-learning process at the institute as part of the education process. Since learning occurs not by recording knowledge but by interpreting it, This Process is a systematic framework and clear metrics to ensure that the course outcomes are met. It helps learners in integrating and processing information as well as allowing them to become knowledge deployers. WIT and WIL designs also allow for the use of new educational technologies and active pedagogical skills.

Using ICT resources, a video is produced and created to give the teacher's perspective ("WIT") on a scenario in the corresponding subject. The documentary is created in such a way that it

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connects every item in the mandated syllabus to the actual world, giving students a hands-on experience with the underlying engineering ideas that they can perceive for themselves ("WIL"). The mechanism for capturing WIT and WIL is also in keeping with the revised Bloom's Taxonomy, in which learner's progress from Lower Order Thinking skills (LOT) to Higher Order Thinking skills (HOT), establishing an intuitive grasp and appreciation of the subject in a real-world setting.

Faculty members at MLWEC use ICT-enabled tools and models to facilitate effective teaching and learning. Faculty members have improved their teaching by using Google Classroom, Group Discussion, Project Based Learning, Plickers and other tools. When faculty members adopted innovative ways, students gladly participated. Modern education technology and active teaching approaches, such as the utilization of audio-visual information, slideshows, case studies, and storytelling through real-world examples, have plenty of scope in the WIT and WIL formats.

| Sr. No. | Innovations in Teaching Learning |
|----------------|---|
| 2.1 | Plickers |
| 2.2 | Think-Pair-Share |
| 2.3 | Google Classroom |
| 2.4 | Project based learning |
| 2.5 | Group Discussion |

2.1 Plickers:

Students were handed cards with a unique pattern for their answers, and the quiz was administered using the tool Plickers. Option A, B, C, or D are possible answers. Students can register their answers by placing cards in front of a mobile camera. This quiz was given to students studying CD, AI and OS.

After the quiz was completed, the answers were presented on the projector screen so that learners could see their results. The question in which students performed poorly was revisited so that students might obtain a healthier understanding of the topic or inquiry.



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Process:

- The teacher will ask a question on the board or on the screen.
- Students will rotate their cards such that their answer choice (A, B, C, or D) is at the top while answering.
- Rotate their card so that the answer choice they choose is at the top.
- When answering questions, make sure their Plickers card is facing the teacher.
- Hold their card still and straight until it is scanned. • The teacher will use his or her smartphone to scan all Plickers cards.

Outcome:

Students will see a response to their solutions very instantly. The professor will point out portions of the question where the presentation is deficient and explain those topics again. As the lecturer focuses on the areas where execution is lacking, the youngsters will understand.

2.2 Think-Pair-share

TPS (Think-pair-share) is a synergistic learning strategy in which students collaborate to solve a problem or answer a question based on assigned reading. Students are supposed to (1) consider a topic or answer to a question, and (2) share their thoughts with their classmates. Examining with a partner enhances investment, focuses attention, and draws learners in to master the material.

Methodology:

The think, pair, share strategy is a cooperative learning technique that promotes individual participation and can be used in any grade level or class size. Three distinct phases are used by students to think through questions:

Think: Students generate their own ideas in response to the question that has been posed.

Pair: Students are paired up to talk about their ideas. This step allows learners to express themselves and consider what others have to say.

Share: Pairs of students present their thoughts to a larger group, such as the entire class. Students often feel better at ease presenting ideas to a group if they have a partner to help them. Furthermore, through this three-step procedure, students' ideas have been polished.

2.3 Google Classroom:

Google Classroom is a free web administration developed by Google for colleges and universities that aims to simplify the creation, distribution, and evaluation of assignments. Google Classroom's primary function is to simplify the most typical method of dividing documents among instructors and aspirants.

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The objective behind Google Classroom is to work with paperless correspondence between instructors and understudies in order to streamline the instructional work procedure. Homeroom allows teachers to create courses, assign tasks, assemble envelopes, and monitor student activity in real time. An online learning platform will be introduced to the learners.

Process:

To make the homeroom in the Google study hall instructor ought to follow focuses given below.

- ✚ Open a Web browser and go to classroom.google.com. You have to sign in With your Google Apps for Education account.
- ✚ On the Welcome screen, click the in addition to sign at the top and pick Create Class.
- ✚ In the Create a Class discourse box, type in the Class Name and Section.
- ✚ Click Create

Teachers plan tasks in the proper documentation format, which they then share in the Google classroom. college students will respond to the assignment assigned in class and upload the pre-arranged note/diagram/work assigned by professors.

Outcome:

Details of the learners like task, class notes and so on will be put away on the web. So information can be gotten to from anyplace. Dynamic learning is conceivable as youngsters ought to present the appointed work inside the specified time span. Google Classroom assists students with being occupied with the home room and in the learning system.

2.4 Project Based Learning:

Project-based learning is a broad approach to classroom teaching and learning that involves students in the research of real-world issues. Faculty members discuss how project design affects motivation and thought, as well as the obstacles that students may have with projects and how technology might help students maintain motivation and thought while working on projects.

Outcome:

Project-based learning creates a deeper comprehension of concepts than standard classroom-based learning and leads to increased levels of creativity in students.

2.5 Group Discussions

Students can benefit from group conversations by learning from one another and articulating course knowledge in their own words. While the interactive dynamic of discussion is not suited to learning enormous quantities of knowledge, it can help students learn and inspire them to



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finish homework and prepare for class. It takes a lot of foresight and ingenuity on the part of the teacher to lead dialogues in which students engage meaningfully.

Process:

Students create four or five-person rings. Provide pupils with a topic and a few minutes to collect their views about it. The conversation then begins, with each student having up to three minutes (or a different length) to speak without interruption.

Outcome:

All students can benefit from extended speaking (and listening) experience in group conversations. As a result, all students benefit from group discussion practice and skill improvement.

3. Each One, Teach One:

The 'Each-one-Teach-one' Program is a programme in which each person teaches another person. The 'Each-one Teach-one' programme has been successfully implemented in the department and has also been successfully implemented at the under-graduate level to assist academically weak students in catching up with their peers. Under the supervision of teachers, intelligent students from the same class or from higher courses function as mentors to weak learners, assisting them in learning.

The CSE Department has taken initiatives to improve student skill sets in this respect, and this methodology helps students improve their presentation, communication, and conceptual knowledge levels through self-preparation and presentation.

Execution Plan:

What Will You Do In Each One, Teach One?

In front of the teacher, the student must teach a topic from the curriculum.

Expected Outcomes:

- Improved self-learning skills
- Improved presentation skills
- Improved subject knowledge

4. E-Learning:

- Faculty and Advanced students are encouraged to register in a variety of certification courses, complete projects of their choosing, and submit papers at conferences and publications.



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- Professors and Students are encouraged to enroll in the NPTEL program/online certification courses related to their own areas of teaching and research interests in order to improve their teaching skills, ensure a smooth teaching process in the regular classroom, and grasp potential concepts more effectively.
- Faculty members are also designated as mentors to assist students in completing the course.
- Students who have not registered for any courses are assisted by a database containing of CDs of all NPTEL courses available in the department library, as well as NPTEL recorded lectures in the centralized digital library.

Self-Learning Methods:

To improve the effectiveness of the teaching and to make teaching more effective to the current generation of the students, the Institute continuously encourages the faculty members to develop/adopt innovative and self-learning methods of teaching. The following methods which are implemented over the past few years depending on the nature of the subject being taught:

A) Open Educational Resources

Teachers and students can access e-journals and e-books through the college library's digital division. For hands-on information, faculty members are encouraged to use e-learning resources available on the internet.

- NPTEL Courses, YouTube, NDL Digital Library and Coursera (MOOCS)
(<https://www.swayam.gov.in>, <https://ndl.iitkgp.ac.in/>)

DELNET- Developing Library Network

DELNET was established in January 1988 at the India International Centre Library and became a society in 1992. It was initially funded by the Department of Scientific and Industrial Research's National Information System for Science and Technology (NISSAT). The National Informatics Centre, Department of Information Technology, Ministry of Communications and Information Technology, Government of India, and the Ministry of Culture, Government of India, subsequently backed it up.



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DELNET was founded with the primary goal of encouraging library resource exchange by establishing a network of libraries. Its goals are to collect, store, and transmit information, as well as to provide users with computerized services, to coordinate efforts for appropriate collection development, and to eliminate unnecessary duplication whenever possible.

<http://delnet.nic.in/>

B) Experiential Learning through Field Visits, Internships and Project work

- At the Institute, the most popular forms of experiential learning include lab assignments, projects, and internships.
- The major goal is to give students hands-on experience and exposure to a work environment, usually linked to their career goals and under the supervision of specialists in the industry.

The impact of Method:

Undergraduate students gain a better understanding of practical challenges such as time and effort optimization, cultural factors influencing product design, and the availability of qualified personnel in the real world as a result of this experience. As a result, the student's performance in employment interviews and technical competition has significantly improved.

Usage of Method: Students are continuously sent for industrial visits and internships.

5. Assignments & Practices.

Students will be provided activities to assist them improve their knowledge through self-learning and the use of accessible resources. The end product, on the other hand, will be better if innovative methods are introduced into the assignment preparation process.

Execution Plan: One assignment per unit during the semester

Expected Outcome:

- ❖ Improving learning ability and
- ❖ Improving subject knowledge



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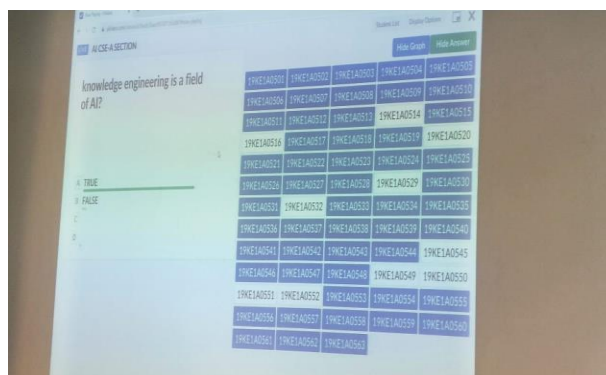
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1. Multimedia Teaching and Learning Method



Interactive Teaching and Learning Methods (WIT &WIL)

a) Plickers



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b) Collaborative Learning Methods or Think-Pair-Share Method





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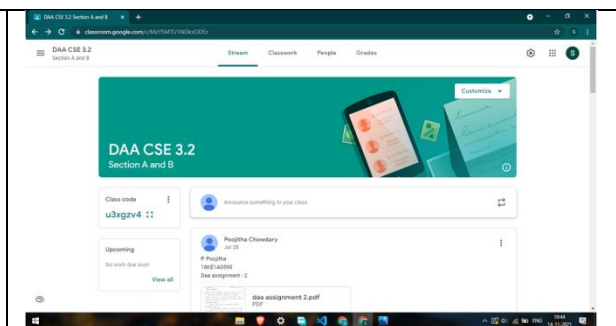
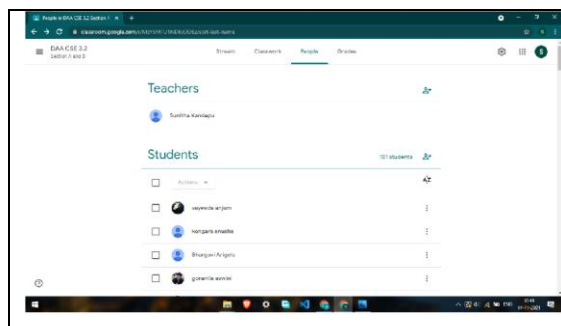
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c) Learning by Group Discussions



d) Google class room Interaction



e) Learning by doing (Poster Presentation)





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f) Participation of students in the Coding Test



- **E-Learning through NPTEL videos**



- **Guest Lecture by our faculty at ADIKAVI NANNAYA UNIVERSITY.**





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- Learning with Each One Teach One.



- Our faculty earned a certificate of appreciation.



- Project based learning.

