



PIMPRI CHINCHWAD EDUCATION TRUST'S
**Pimpri Chinchwad College of
Engineering & Research Ravet, Pune**
IQAC PCCOER



Department of Computer Engineering Innovations in Teaching Learning & Peer Review

Innovations by the Faculty in Teaching and Learning : The significance of an innovative teaching-learning process in education is multifaceted, influencing various aspects of student development and the overall educational landscape. Here are some key points highlighting its significance and outcomes

- Enhanced Student Engagement and interest making learning process meaningful and enjoyable.
- Critical Thinking and Problem-Solving Skills is enhanced by applying theoretical knowledge on real life case studies, collaborative project and problem based learning.
- Adaptability to Diverse Learning Styles
- Technology Integration
- Nurtures Creativity and stimulates Innovative thinking and imagination
- Life Skills Development like communication, team work, time management etc.
- Preparation for Future Careers by instilling a diverse skill set through proper balance of theoretical knowledge blended with transferrable skills
- Awareness of Global Perspective and Cultural Awareness
- Encourages mindset of Continuous Learning and Adaptation to change

- Active participation empowers students to take ownership of their learning
- Efficient use of resources through technology
- Elevates teaching process as teachers are also encouraged to adopt more dynamic and effective instructional strategies.

The significance of an innovative teaching learning process lies in its ability to create a dynamic , engaging and effective educational experience that prepares students not only for academic success but also for challenges of a rapidly changing world. It equips them with the skills , mindset and knowledge needed to thrive in diverse personal, professional and societal contexts. Following are few examples of innovations adopted by the department

1)Jigsaw Puzzle: Jigsaw is a cooperative group activity in which students are interdependent to achieve a common goal. In part one, each group is provided a different prompt. The group members become experts on that prompt and create a group response. In part two, new groups are the formed; comprised of students from different expert groups. Each student in the intermixed group is expected to teach the other group members their prompt-response from their previous group, "expert group". The intermixed groups then complete a new task. The success of the group depends on each individual and therefore prompts engagement from individual students.

Objective :

To encourage students for listening, engagement, and empathy by giving each member of the group an essential part to play in the academic activity with self learning.

Outcome :

- Co-operative learning increases
- Life Skills Development like communication, team work, time management etc

2) Practice set : Everyone learns in their own way — but we do share a few patterns in common. We all learn more effectively when we practice, and even more so when we get specific feedback.

But with large classes of students at different skill levels, teachers can have trouble supporting individual journeys. It helps to spend less time on tedious tasks like grading, and more time focused on their students' unique needs.

So practice set an upcoming feature in Google Classroom helps us to do that. Practice sets will give teachers the time and tools to better support their students — from more interactive lessons to faster and more personal feedback.

Objective : Engaging Students with more interactive lessons to faster and more personal feedback.

Outcome:

- Improves thinking capability
- Students get real-time feedback
- Releases Stress.
- Boost student confidence

3) Think, Pair, Share : Think-Pair-Share (TPS) is a cooperative learning activity that can work in varied size classrooms Instructors pose a question, students first THINK to themselves prior to being instructed to discuss their response with a person sitting near them (PAIR). Finally, the groups SHARE out what they discussed with their partner to the entire class and discussion continues. Students get time to think critically, creating a learning environment that encourages high quality responses.

Objective : To provide an opportunity for students to work in groups toward a common goal, increasing their own and others' understanding in a safe environment to make mistakes

Outcome :

Enhanced understanding of individual and as a part of group

Confidence is boosted because mistakes are allowed in a limited group.

4) Fishbowl : Fishbowl is a strategy for organizing medium- to large-group discussions. Students are separated into an inner and outer circle. In the inner circle or fishbowl, students have a discussion; students in the outer circle listen to the discussion and take notes. This engaging and student-centered strategy builds comprehension of complex texts/ideas while developing group discussion skills. In the "fishbowl," students practice responding to multiple viewpoints. Observations from students in the outer circle provide insight into what makes for effective small-group discussions. Research supports the use of fishbowls as an effective way to engage students with a range of abilities and in multiple settings.

Objective : To develop group communication and enhance conceptual understanding

Outcome : Wider understanding of the concepts as per individuals perception./

5) Decoder : Decoder is a mobile coding IDE and platform, where students can run projects, code and learn algorithms by programming on mobile. Build and deploy projects straight from the mobile and integrate with Git (Gtihub, bitbucker) and sync with vs code, use of code compilations to make coding easy.

Objective : To make programming environment more user friendly

Outcome : To increase students interest in programming .

6) AnyDesk Software: AnyDesk is the ultimate remote access app for Android- giving you a truly mobile solution to remote desktop connectivity and remote control via android devices. software program provides platform independent remote access to personal computers and other devices running the host application

Objective : Technology Integration

Outcome : Awareness of Global Perspective in diverse circumstances

7) Online Compiler and Notebook : Online compilers are type of tools that allows compiling the source code and executing it. Online compilers execute in various programming language. We use different compilers to run our codes like Dev C++, Visual Studio, Turbo C++, etc. . An online compiler has the same basic functionality as a conventional compiler.

Eg. For subject like Principle Of Programming languages, Data Structure, high performance computing, Machine learning, deep learning etc.

Eg. Googlecolab, Jupyter are the notebooks allow you to combine executable code and rich text in a single document, along with images, HTML, LaTeX and more .

Objective : Efficient use of resources through technology for real life problem solving

Outcome : Adaptability to Diverse Learning Styles

8) YouTube channel video/blog:

Objective: Defining your core message, knowledge.

Outcome: Student will be able to understand, identify, recognize and refer video for their references.

Faculty Name	Link : Youtube	Website/ Blog
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Dr. Archana Ajit Chaugule	Youtube:  https://www.youtube.com/channel/UCfPAA2OcTJL3yHnaH9O8i0A	 https://sites.google.com/pcocer.in/archanachaugule/home?authuser=0
	Udemy:  https://www.udemy.com/user/archana-chaugule-3/	
Mr. Mahendra Balkrishna Salunke	Youtube: 	

	https://www.youtube.com/channel/UCDyrG-pZ5-7AjkgV9I2Y2MA	https://www.microsig.webs.com/
Mrs. Vaishali Prasad Latke	<p>Youtube:</p>  <p>https://www.youtube.com/watch?v=I1_MRqc4pzY</p>	 <p>https://vaishalilatke.wixsite.com/blog</p>
Mrs. Sonali S. Lunawat	<p>Youtube:</p>  <p>https://www.youtube.com/channel/UCcmuChi4txIT1MkQXxKW-uQ</p>	 <p>https://sonallunawat4u.wordpress.com/</p>
Mrs. Madhuri Husan Badole	<p>Youtube:</p>	

	 https://www.youtube.com/channel/UCoT3IF15kpSdvy58bh7WUsg	 https://madhurihadole.wordpress.com
Mrs. Meenal Ramakant Bodake	Youtube:  https://www.youtube.com/channel/UCbaQ6AcWKL6o2tUoeHBBPCw	
Dr. Vijay ArunKotkar	Youtube:  https://www.youtube.com/channel/Uct6b_aStTn1kFV6kVw42W_g	

<p>Mrs. Madhuri Narayan Kumbhar</p>	<p>Youtube:</p>  <p>https://www.youtube.com/channel/UctgOIdApbZAd8sCKYoTJYzA</p>	
<p>Ms. Deepa Pushkar Mahajan</p>	<p>Youtube:</p>  <p>https://www.youtube.com/@deepabendale6871</p>	
<p>Mrs. Tejaswini Hanumant Gavhane</p>	<p>Youtube:</p>  <p>https://www.youtube.com/channel/UCr57AG3c4GDcdo</p>	

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Also one of our faculty Dr. Archana Chaugule is serving as Instructor

9) Code pair, Debugging the code and problem solving: Faculty shares a problem statement among the student. Students with the group solve the problem and submit it to faculty. Pair programming is a technique in which two programmers work together on one platform. One, the driver, writes code while the other, the observer or navigator, reviews or debug each line of code as it is typed in. The two programmers switch roles frequently.

Objective: To test the programming skills of the student.

Outcome:

- To Edit the code, provide input, and test code by running it live on our platform.
- To code different languages in a real programming environment
- To gain better clarity on actual skills while ensuring candidates have a developer-friendly experience.

10) Project Based Learning: The department frame it's curriculum in such a way that students acquire the skills to design and create mini project in various domains. In PBL projects students often use multiple learning techniques to succeed, which includes research, logical deduction and iterative learning (trial and error). Since these projects are usually too large and complex for one student to do alone. Project based learning also tends to encourage teamwork. Faculty members frame problem statement and circulate to students. Problem statement is mostly related to upcoming emerging trends, societal needs etc.

Objective:

- Self directed learning.

- Problem solving

Outcome:

- To increase motivation for learning, critical thinking, writing and also to enhance communication skills.
- To self-formulate goals and objectives of learning of particular topics.
- Project exhibitions are conducted in the department ever year to enrich the project developing skills of the students.

Sr.No	A.Y	Total Group	Outcome	Mapping to PO & PSO
1	2018-19	12	1) Helps in placements	PO1 - PO12, PSO1 -PSO3
2	2019-20	32	2)In-house project quality is enhanced	
3	2020-21	30		
4	2021-22	30	3) Prototypes are developed	
5	2022-23	31	4) Participation in poster and project competition is increased	

11) Crossword Puzzles: A crossword is a word puzzle and word search game that usually takes the form of a square or a rectangular grid of white and black-shaded squares. The goal is to fill the white squares with letters, forming words or phrases, by solving clues, which lead to the answers.

Objective: Engaging Students with Content Area Vocabulary.

Outcome:

- Improves Content Area Vocabulary

- To Releases Stress.

12) Snakes and Ladders : Snakes and Ladders is a technique with the help of which students solve online questions and move forward by the number of places shown in the bracket [] in front of the MCQ option. The number written inside [] indicates dice position and Pawn moves as dice number. If the student answers the right answer and the ladder is encountered they will climb the ladder and if the answer is wrong and the pawn encounters the snake it will move downwards by that position.

Objective: Develop critical thinking teaching-learning process.

Outcome:

- To encourage students' participation during the teaching-learning process and develop students understanding of the concept
- Snake and Ladder facilitate the students to learn about counting, interaction, and socialization.

13) Quizzes: Technical quizzes are conducted for the students by using Exambuzz online quiz platform, Kahoot or google Quiz. Faculty prepare quiz & circulate among students by using these tools.

Objective: To measure growth in knowledge.

Outcome:

- To reinvent the education system and give students a break from traditional classroom learning.
- To gain knowledge, seek opportunities to excel beyond academics.
- To ensure active participation among students.

14) Online Courses: Faculty members and students undergo online courses from sources like NPTEL, Coursera, FOSS, Udemy, solo learn, etc in their area of interest. This helps them to enrich their knowledge of current trends and also to

equip themselves with inter-domain expertise. They are certified by national and international universities and are motivated towards life learning. Online courses also provide a forum for discussion among experts and students worldwide. After getting expertise, faculty share study material & their knowledge with students. Each faculty has undergone certification courses from different universities. The faculty encourages students to undergo different online certifications. Teaching methods adopted to improve student learning through the following resources available at centralized / department level:

1. E-shodhsindhu.
2. Plagiarism checking using Turnitin plagiarism software.
3. E-learning portal where we upload subject-related material like (PPT, notes, a question bank, etc).

Objective: Identify the right content for the online course and develop effective assessments to evaluate learning.

Outcome:

- To meet demand for Education 4.0.
- To develop self learning attitude.
- To Improve user-accessibility and time flexibility to engage learners in the learning process.

15) Visualization / Animation : Visualization is a technique for creating images, diagrams, etc. Visualization is an effective way to communicate both abstract and concrete ideas. The faculty conducts some of the concepts by showing the graphical view of the program. These help students to easily grab the concept.

Objective: To clear the concept through visualization.

Outcome: To understand, learn, and remember the concept.

16) Flipped Classroom: In Flipped classroom, students read materials or watch videos before the class in order to participate in discussion or activities. Students are motivated to present a topic on syllabus for 05 to 10 minutes during class hours for improving communication skills and to overcome stage fear.

Objective: To prepare for an active learning experience in the classroom.

Outcomes:

- Through this activity, students are able to develop professional and personal skills.
- To understand the topic and also to correlate.

17) Smart Classrooms: All classrooms are well equipped with network connectivity, green board, projector, standard teaching aids (audio-video components, etc), in addition to this, each department has one classroom with an interactive smart board. Smart boards make learning more dynamic since it facilitates a different form of presenting the information. In smart classes, all interactive modules like video and presentation are used. This visually attractive method of teaching becomes appealing to students. In fact, smart classes help students to easily relate the concept with the animated visual. Here the audiovisual sense of student is targeted and it helps the student to grab the information effectively.

Objective: To make better learning and understanding.

Outcomes:

- To understand lectures more effectively.
- To improve better visualization and creativity.

18) Google Classroom: Google Classroom is an application designed to enhance the learning experience which is incorporated in our teaching learning process. It helps to interact with students 24×7, by posting technical contents, notes, assignment and also facilitates to conduct and evaluate online quizzes.

Objective: To Share information (subject material) between teachers and students

Outcome: To improve access and attentiveness towards learning, knowledge.

19) Activity Based Learning: Co-curricular and extracurricular activities are conducted to motivate the students and to improve problem solving capabilities, leadership abilities in multi-disciplinary, co-operation in teamwork, consciousness in professional ethics and administering critical situations. These activities include webinar, Aptitude training, social welfare camp, problem solving, critical thinking, group discussion, Entrepreneurship development cell etc.

Objective: To engage students in self initiated activity to improve self-learning skills.

Outcome:

- To solve the problems related to societal needs.
- To develop professional ethics.

20) Industrial visit/Trainings: Industrial visits and training are organized for students to bridge the gap between the theoretical learning and practical training in real life environments. Students understand the industrial practice and organizational hierarchy during industrial visits. Industrial visits provide

opportunities for active/interactive learning experiments outside classroom environment in addition to usual classroom learning.

Objective: To bridge a gap between academia and industry.

Outcome:

- To learn the working culture of corporate.
- Know how the problems is solved by using modern tools & techniques.

To improve the teaching – learning process , Please give your valuable feedback/ opinion suggestions/ comments on following link or scanning following code

<https://forms.gle/Cq5vBgQAmNfyfXu3A>

