REPORT ON PROBLEM BASED ENGINEERING LEARNING-

In this comprehensive report, we will delve into the world of problem-based engineering learning (PBL) and its implementation in engineering education. Through case studies and analysis, we will explore the benefits, challenges, and future directions of this innovative approach given by Smapada Mam.

Event Details:

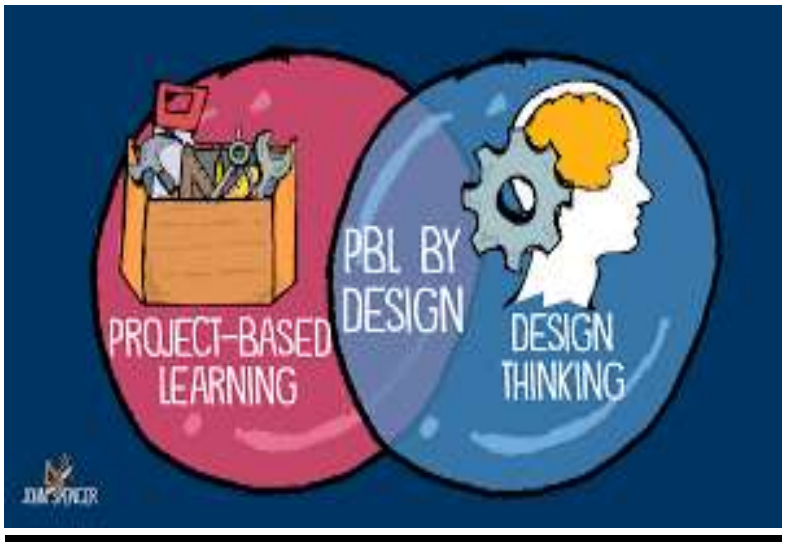
Date: July 7th, 2023

Venue: ISE SEMINAR HALL, RV College of Engineering

Organizer: SPARK, The IUCEE-RVCE Student Chapter

Introduction-

Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem. This problem is what drives the motivation and the learning.



Overview of Problem-Based Learning (PBL)-

Underscore the key principles and methodology behind problem-based learning, emphasizing its student-centered, collaborative nature and its role in developing real-world problem-solving skills.

Difference between Problem Based Learning(PBL) and Project Based Learning(PrBL)-

PROBLEM BASED LEARNING	PROJECT BASED LEARNING
Process Oriented	Outcome Oriented
Driven by Real World Problem	Driven by Project Goal
Inquiry, Research,Self Directed Learning, Higher Order Thinking	Content Knowledge, Communication Skills, Project Management Skills
Continuous Assessment, Cognitive and Critical Analysis Score	Continuous + Summative Assessment, Content Knowledge, Collaboration and Project Outcome
Long Term Retention of Specific Knowledge	Combined Knowledge and Hands-On Skills

Benefits of PBL in Engineering Education-

1-Enhances critical thinking

PBL stimulates analytical thinking, enabling students to tackle complex engineering problems creatively.

2-Fosters teamwork and collaboration

PBL encourages collaboration, mirroring the collaborative nature of engineering projects in the professional world.

3-Develops practical skills

PBL equips students with practical skills, allowing them to apply theoretical knowledge to real-life engineering challenges.

PBL Framework-

1-Identify a relevant and real-world problem.

2-Research the sources of the problem.

3-Examine the issue from every perspective.

4-Learn about the needs of a community or organization that is impacted .

5-Explore various solutions.

6-Verify every solution that can be put into action.

Challenges in Implementing PBL in Engineering Education-

- **Resistance to change**

Address the resistance from traditional teaching and learning methods, emphasizing the need for adaptability.

- **Faculty training and support**

Highlight the importance of training and supporting faculty in adopting PBL to ensure successful implementation.

- **Assessment methods**

Discuss the challenges of assessing student performance in PBL, exploring alternative assessment methods.

Case Studies of PBL Approaches given by Sampada Mam-

- **Case 1-**

SITUATION- A disabled gentleman in self propelled wheelchair enters in a lift in an ultra high rise building

PROBLEM-The top floor button is located beyond his reach

After stating this problem in front of us, Mam asked us the solutions of this problem. Many students show different approaches. Different approaches are listed below-

1-What if, the chair can rise

2-What if,the lift is voice controlled

3-What if, someone comes at that point of time.

4-What if, he pressed the floor button which he could reach and waited for someone to come and press for him.

- **Case 2-**

SITUATION-A cyclist gets a tyre puncture in the middle of a cyclothon

PROBLEM-The puncture repair puts him behind by 30 minutes in the race

Mam shared with us that this is the problem that she also faced when she goes cycling in the early morning.

Students also show a different approach to this problem.

One said what if we fix brooms in front of our cycle.

This is the approach that is actually possible.

Other than this, the various approach are-

1-What if we use tubes which are punctureless?

2-What if we place a camera in front of the bicycle so we can see the obstacle.

3-What if a bicycle rider can carry additional tyres as a safe side with him?

Conclusion and Future Directions-

Summarize the findings and insights from the report, emphasizing the significance of PBL in engineering education as demonstrated by Sampada Mam.