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BRILLIANT INSTITUTE OF ENGINEERING & TECHNOLOGY
(Approved by AICTE, New Delhi, Affiliated to JNTU-Hyderabad)
Abdullapur(V), Abdullapurmet (M), R.R. Dt. Hyderabad - 501505
Website: www.b-iet.ac.in, e-mail: principal@b-iet.ac.in

DEPARTMENT OF CIVIL ENGINEERING

Academic Year: 2023 – 24

Course	Structural Engineering - I	Year / Semester	III/ I
Topic	Design of Compression Members	Innovative Method Chosen	**Problem Based Learning**

Problem Based Learning:

Problem-based learning is a teaching method in which students learn concepts by working on a real-world or practical problem. It encourages students to identify the problem, collect relevant information, analyze possible solutions, and apply their knowledge to solve it. Students usually work individually or in groups, while the teacher acts as a facilitator and guides them throughout the learning process. This approach develops problem-solving skills, critical thinking, teamwork, decision-making, and the ability to apply theoretical knowledge to practical situations.

Objectives:

1. To engage students in identifying, analyzing, and solving real-world problems related to the Design of Compression Members, and to help them apply theoretical knowledge, make appropriate design decisions, and develop practical structural solutions.
2. To help students develop critical and creative thinking, improve their problem-solving ability, and enhance teamwork and decision-making skills while designing and evaluating compression members subjected to axial loads.

Outcomes:

1. The learning ability of students will be enhanced by encouraging them to apply theoretical knowledge of compression members to real-world structural design problems through active learning and practical activities

2. Problem-solving, critical thinking, teamwork, and decision-making abilities of students will be improved through the analysis and design of compression members, including consideration of buckling, slenderness ratio, effective length, and design strength

Justification:

Problem-based learning is an active learning approach that helps students understand concepts by solving real-world and practical problems. It is a technique that promotes critical thinking and practical application, so this practice will help students connect theoretical knowledge with practical situations and develop effective problem-solving skills.

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Details of the Implementation:

- Faculty explained the concept of Design of Compression members and its practical applications.
- Based on the discussion, the teacher presented a practical problem related to the design of a steel compression member and asked the students to identify and solve the problem within 15 minutes.
- Each student analyzed the given problem and proposed a suitable design by considering the effective length, slenderness ratio, and buckling strength of the compression member.

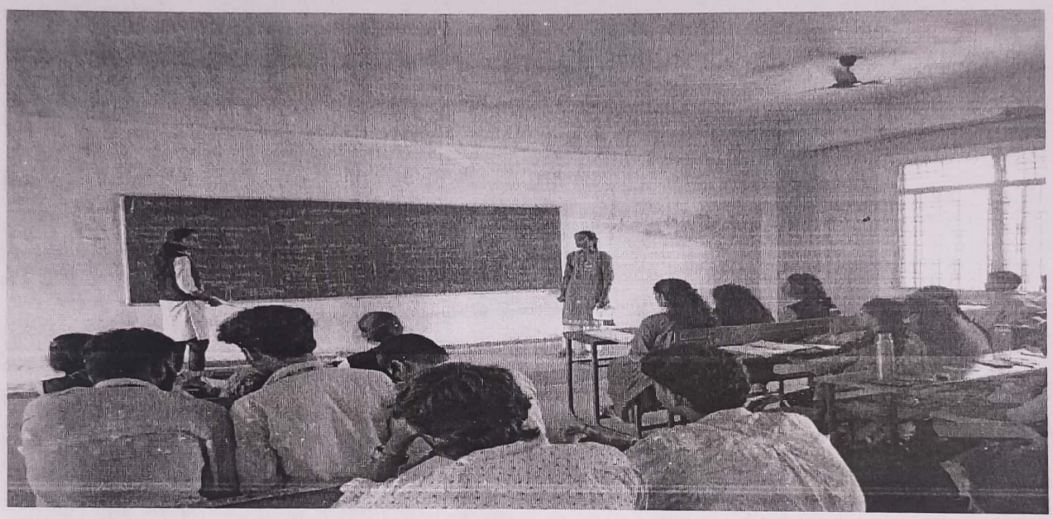


Figure 1: Problem based Learning Explained about Design of compression members by 22QA5A0111 (A.Sruthi) , 2QA5A0118 (M. Sreenija)

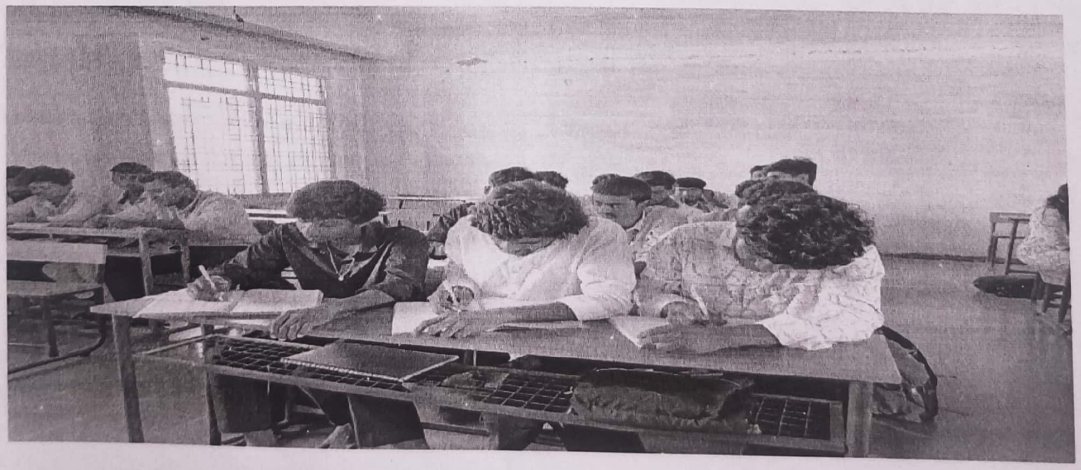


Figure 2: Students solving problems on Design of Compression members

Coordinator

Head of the Department

Head of the Department
Department of Civil Engineering

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DEPARTMENT OF CIVIL ENGINEERING

Date: 02-01-2024

To
The Principal,
Brilliant Institute of Engineering and Technology,
Adbullapur (V & M) - 501505,
R. R. District, Hyderabad.

Respected Sir,

Sub: Seeking Permission – Innovative TLP – Req. – Reg.
* * *

We are hereby bringing to your kind notice that the Department of Civil Engineering is going to conduct an innovative teaching-learning session, i.e., Problem-Based Learning (PBL), conducted by our faculty members for our students. In this method, students are given a practical engineering problem and encouraged to understand, analyze, discuss, and solve the problem through group work. It is a student-centered learning approach that promotes problem-solving, critical thinking, teamwork, and practical application of engineering knowledge.

We have scheduled the program on 08-01-2024 from 11:05 PM to 12:45PM for III - I Semester students. This will be a good knowledge-sharing and problem-solving platform for students and will help them improve their technical and analytical skills.

We are confident that you will continue to support and encourage such innovative teaching-learning practices for the academic development of students.

In this regard, we kindly request you to permit us to conduct the Problem-Based Learning (PBL) program for the students.

Thanking you sir.

Yours Sincerely,

Head of the Department

Head of the Department
Department of Civil Engineering
Brilliant Institute of Engineering & Technology
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DEPARTMENT OF CIVIL ENGINEERING

Date: 03-01-2024

Circular

This is to inform faculty members and students in the Department of Civil Engineering that the department is going to conduct a Problem-Based Learning (PBL) activity involving faculty along with students on "Design of Compression Members" on 08-01-2024 from 11:05 PM to 12:45PM. This will be a good knowledge-sharing and problem-solving platform for students to develop their ideas and solutions through group discussions, analysis, and application of engineering concepts. Hence, it is directed that all the students of III Year I Semester and those who are interested to participate enroll their names with the concerned faculty on or before 06-01-2024.

Head of the Department

Head of the Department
Department of Civil Engineering
Brilliant Institute of Engineering & Technology
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Copy to:

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Problem-Based Learning (PBL): Problem-Based Learning is a modern teaching method where students learn by solving practical or real-world problems rather than only listening to lectures.

Explanation:

In a normal classroom, the faculty explains the lesson and students mainly listen, take notes, and complete exercises after class.

In Problem-Based Learning, students are given a practical engineering problem. Students work in groups to understand and analyze the problem, identify the required information, apply relevant concepts, perform calculations, and develop suitable solutions. The faculty acts as a facilitator by guiding the students, clarifying doubts, and providing suggestions whenever required.

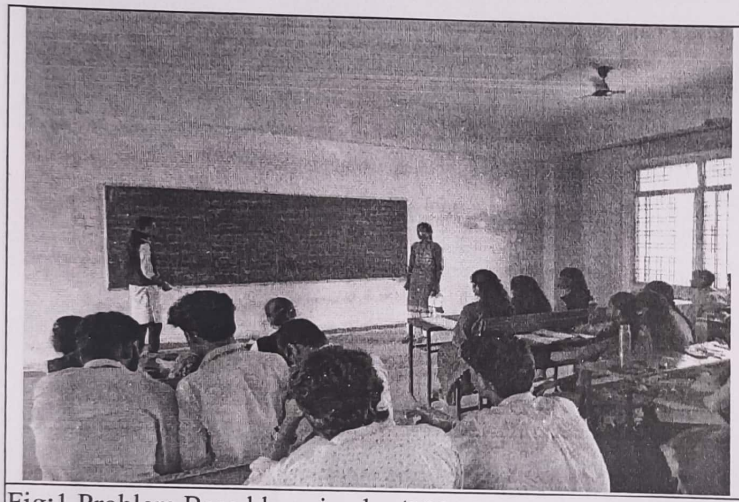
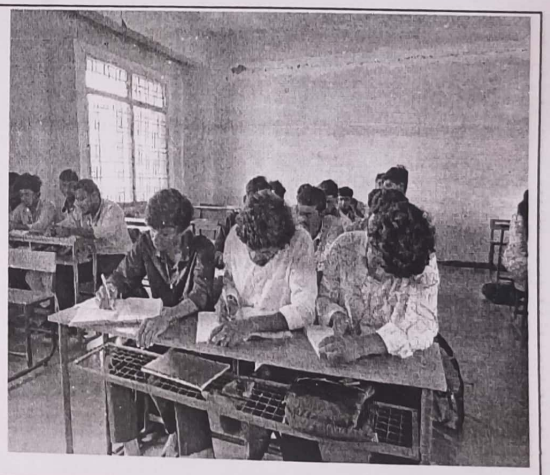


Fig:1 Problem Based learning by (22QA5A0111,2QA5A0118)



Students solving problems on Design of Compression members

It Works

1. Before class: Students are provided with learning materials such as presentations, notes, videos, or reference materials covering the basic concepts and design principles of compression members.
2. During class: Students are given practical design problems related to compression members. They work in groups to analyze the given problem, identify the required data, apply relevant design principles, perform calculations, and develop suitable solutions. The faculty guides the students, clarifies doubts, and provides individual support, making the learning process more interactive and practical.

It is useful

Students develop problem-solving, analytical, and design skills through practical application of structural engineering concepts. It encourages active learning, teamwork, critical thinking, and better understanding of the design principles of compression members. It also provides opportunities for discussion, doubt-clearing, and collaborative solution development.

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Example: A Structural Engineering faculty gives students a practical problem on the design of a compression member subjected to a specified axial load. Students work in groups to identify the given load, effective length, end conditions, material properties, and design requirements. They perform the necessary design calculations, check the member for buckling and compressive strength, and determine a suitable section. Finally, each group presents its solution and explains the design procedure for the compression member while the faculty guides and clarifies their doubts.

Coordinator

Head of the Department

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DEPARTMENT OF CIVIL ENGINEERING

Summary Report

On

Problem Based Learning

The Department of Civil Engineering conducted The Department of Civil Engineering conducted a Problem-Based Learning (PBL) session on the topic "Design of Compression Members". The main objective of this activity was to enhance the problem-solving skills, analytical skills, technical knowledge, and design abilities of students. The activity also helped students develop confidence in analyzing engineering problems and presenting suitable solutions.

The event was organized in the form of group-based problem solving on Design of Compression Members in Structural Engineering-I, with emphasis on their engineering applications. The session encouraged active participation, collaborative learning, and practical application of structural engineering concepts among students. It was mapped to Program Outcomes (PO1, PO2, PO3), focusing on engineering knowledge, problem analysis, and design/development of solutions.

A large number of students actively participated in the activity and worked in groups to analyze the given structural engineering problem. Students identified the loading conditions, support conditions, effective length, material properties, and design requirements. They applied relevant design principles, performed necessary calculations, checked the member for compressive strength and buckling, and developed suitable design solutions. Each group presented its solution and explained the design procedure to the class.

On this occasion, Dr. Shaik Rusthum, Principal, motivated the students to take part in such academic activities and appreciated their enthusiasm. He congratulated the organizing committee for successfully conducting the activity and advised the faculty members to organize more such interactive and problem-solving activities to develop confidence, leadership qualities, analytical skills, and technical competence among students.

The program concluded successfully with positive feedback from both students and faculty members. The Problem-Based Learning approach proved to be an effective method for improving student engagement, collaborative learning, problem-solving ability, technical knowledge, and conceptual understanding of the design of compression members.

The activity also encouraged a competitive spirit among the students. The total number of students participated was 24.

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DEPARTMENT OF CIVIL ENGINEERING

Winner Notification

S.NO	Roll Number	Name Of The Student
1	22QA5A0111	A. Sruthi
2	22QA5A0118	M. Sreenija
3	22QA5A0124	T .Sai Krishna
4	22QA5A0126	K.Akhil

Coordinator

Head of the Department

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