PROBLEM BASED LEARNING

Environmental Control Technology

(Heating, Ventilation, Air Conditioning and Refrigeration)

ECT 16: Fundamentals of Heating and Air Conditioning

Fundamentals of Heating and Air Conditioning
Overview: Problem Based Learning (PBL) Scenario

CLASS 1:
[] Introduction to the Problem Based Learning (PBL) Approach [] Divide the class into groups (4 groups) [] Receive the assigned Problem Based Learning scenario

In class:
[] Review your assigned Problem Based Learning (PBL) scenario
[] Investigate and identify the problem
[] Gather information
  • Use Proper Troubleshooting Steps handout (see packet for hand out)
  • Use Need to Know Board to compile facts (see packet for hand out)

Outside of class: [] Analyze the problem   • Begin the process of creating a file folder that includes: documentation of the problem, process and repairs

CLASS 2:
In class: [] Identify the problem [] Solve and fix the problem

Outside of class:
[] Compile a file folder that includes: documentation of the problem, process and repairs
[] Create a group Power Point Presentation that identifies the problem and provides a solution(s)
  • Divide the tasks among the group members so that each person presents a different section of the presentation (1-2 minutes per group member)
  • The day of the presentation group members <u>must</u> dress in business attire
  • Final presentation components must include: individual and team evaluations (see packet for guidelines)

CLASS 3:
In class: [] Turn in the completed file folder that includes: documentation of the problem, process, and repairs [] Group Power Point presentations and turn in evaluations

PROBLEM BASED LEARNING (PBL) SCENARIO

Instructor: Nick Kyriakopedi
Course: Fundamentals of Heating and Air Conditioning
Course Number/Code: ECT 16

SCENARIO TITLE
"Noisy Air Handling Unit #3 in Room B-150"

Course Concept:
Troubleshooting a noisy AC unit

SCENARIO DURATION
3 class periods
Date:
- Introduction to the problem based learning theory and scenario
- Investigate the problem and gather information

Date:
- Solve and repair the problem

Date:
- Group Power Point Presentation and individual and team evaluations
- Turn in completed file folder that includes: documentation of the problem, process, and repairs

BUSINESS PARTNER
Laney College, Environmental Control and Technology (ECT) Department

LEARNING OBJECTIVES
By the end of the semester, students will be able to demonstrate the ability to:
- Gather, organize, and analyze information
- Determine the problem, provide solution(s) and recommendations
- Properly repair the problem
- Create a file folder that includes: documentation of the problem, process and repairs

THE FOCUS OF THE PROBLEM
- The focus of this Problem Based Learning (PBL) scenario is based around a real life scenario.

In various settings, the Problem Based Learning (PBL) scenario may be presented as a real time problem, hands-on scenario, or hypothetical problem. Using critical thinking and investigation, the students go through a process to solve a problem and provide recommendations for a solution.

PROBLEMATIC SITUATION

There is a HVACR Commercial Systems class that meets in room B150. Recently, there have been complaints of a loud noise from the air handling unit #3. A metal strap seems to be shaking and vibrating which often distracts the students from being able to clearly hear the instructor and is starting to affect the learning process.

It is your job to gather information, identify what causes this noise and provide a solution to repair the problem. You must also show the ability to properly document the problem and repairs made.

STUDENT MATERIALS

The instructor will provide students with the following information:

- A copy of the Problem Based Learning (PBL) cycle and steps
- An explanation of the Problem Based Learning (PBL) approach
- Tool: "Need to know board" to gather information
- Tool: Scoring rubric for final presentation
- Tool: Proper Troubleshooting Steps
- Tool: Assessing your team members evaluation
- Problem Based Learning (PBL) scenario evaluation

Resources and Media:

- The internet
- Educational materials and books
- Industry resources on HVAC systems
- Videos, CD and DVD on HVAC systems

INSTUCTOR ROLE

The instructor will support the Problem Based Learning (PBL) experience by:

- Introducing the scenario and process
- Facilitating reflection and discussion
- Providing applicable resources and materials
- Answering any questions related to the scenario and coursework
- Providing class time to work on the scenario

STUDENT ROLE AND GUIDELINES

Individual

The intended outcome will be measured by having each student:

- Demonstrate the proper troubleshooting process
- Gather and collect information in order to identify and solve the problem
- Perform a specific individual role in their team
- Execute a specific individual role in the final presentation
- Complete a Problem Based Learning (PBL) scenario evaluation as a part of the final project

Group: Each group will consist of 4-5 students

The intended outcome will be measured by providing:

- A power point presentation where each student will dress in business attire and orally present a part of the group presentation (1-2 minutes per group member)
- A file folder that includes: documentation of the problem, process and repairs

STUDENT FEEDBACK

As a team, and individually - students will review, assess and provide feedback regarding the Problem Based Learning (PBL) scenario experience.

Requirements of the final project:

- Completion of a short Problem Based Learning (PBL) questionnaire
- Completion of a short team member evaluation

TEAM LINK

The instructor will support the team learning process by allowing:

- Time to meet during class, outside of class and on the phone to work on the scenario