Teaching Methodology for Project Team

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ABSTRACT

Students from Engineering Technology Programs should be able to work as members of Project Teams with Engineers to help find solutions to technical problems. Come and learn the methodology for problem solving by participating on a project team to derive solutions to an actual electromechanical design problem using a hematology analyzer from industry. This exercise will utilize the methods actually used by a project team from a Biomedical Instrumentation Corporation in which both engineers and technicians from various disciplines participated.

The steps involved will consist of the following:

1. Determine the nature of the problem and create specifications.
2. Brainstorming to compile a list of possible solutions.
3. Select three best possible solutions.
4. Sketch one of the solutions.
5. Suggest ways to test solutions.

This method can be used in any number of technology courses and will help the student prepare for problem solving and working in a team environment.

Introduction

The following is a method of problem solving used by project teams in industry. It has been tailored for use in courses taught in Engineering and Engineering Technology. For each step comprising the method, a different person shall be responsible for taking notes that will then be distributed to other team members.

Part 1: Determine the Nature of the Problem and Create Specifications.

- An operational explanation of a sample Hematology Analyzer is provided and a particular technical problem is presented.
- The team then asks several questions in order to help them compile a list of specifications needed to meet the requirements for the given problem.
Part 2: Brainstorm to Compile a List of Possible Solutions.

- A list of ideas created by the team are placed on a chalkboard using the following guidelines:
  1. No judgment is passed on any particular idea at this time.
  2. Provide as many ideas as possible, even though some of them appear unrealistic.
  3. Use a given idea to spark others.
  4. Suggest things that actually exist that could be adapted to solve the problem.

Note: If this were an actual problem in industry, or a class project, the team would be given time to perform additional research.

Part 3: Select Three Best Possible Solutions.

- The team selects the criteria for judging the best possible solutions.
- The team evaluates and selects three of the solutions produced in the brainstorming session.

Part 4: Produce Rough Sketches

A rough sketch of each selected solution is produced.

Part 5: Solution Testing

A list of possible ways to conduct tests on each solution is generated.

Conclusion:

In industry, actual models are built to test the design recommendations. In the classroom environment, this may, or may not be done, depending upon the time and resources available.

Historically, solutions produced by student teams have been quite similar to those of actual industrial project teams.

Bibliography

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