

Turning your FIRST LEGO League Robotics project into a Science Fair Project:

Your FIRST LEGO League Robotics project is an engineering project that can be entered in the Intel Northwest Science Expo! More than likely, you have used engineering goals and the development process to make your robot complete the missions for the FLL Challenge for this year.

What is the Intel Northwest Science Expo?

The Intel Northwest science Expo is the state science fair for Oregon and Southwest Washington for 5th-12th grade students. Intel NWSE winners qualify for the Discovery Channel Young Scientists Challenge and Intel International Science and Engineering Fair. The 23rd Annual Intel NWSE is March 17, 2006.

What are engineering goals and the development process?

Goals of Engineering (From the Student Handbook for Pre-college Science & Engineering Projects, 2005-2006 Edition):

An engineering project should state the engineering goals, the development process, and the evaluation of improvements. Engineering projects may include the following steps:

- 1) Define a need.
- 2) Develop design criteria.
- 3) Search literature to see what has already been done.
- 4) Prepare preliminary designs.
- 5) Build and test a prototype.
- 6) Retest and redesign as necessary.

How do the engineering goals and the development process apply to the FIRST LEGO League Robotics challenge missions?

Figuring out how your project follows the engineering goals is as easy as answering a few questions. You may not need to answer all of the questions, and you may find other questions that need to be answered, but these are a guideline.

What is the need?

What does your robot need to accomplish?

What are the limitations (size, weight, power, building materials)?

What are your design criteria? How should your robot accomplish these things?

How is it accomplished by programming?

How is it accomplished by building a particular part of your robot?

How did this particular mission solution fit into your overall design for the robot?

What has already been done? Did you do any literature searching?

Did you base your robot on examples found elsewhere?

What examples are these?

How did you improve on them?

Did you test, evaluate, and redesign your robot?

When you made your robot, what early designs did you try?

What worked and didn't work?

Why did you change the design?

How did you change the design?

Did the design changes work?

How did all your design changes interact to make your final robot?

What is a prototype?

Prototype: A working model used to demonstrate and test some aspect of the design or the design as a whole. A prototype is produced before the final version. So your early designs of your LEGO robot are all considered prototypes, while your competition design is your final version.

What part of our project should we present?

Your project can focus on your robot's physical characteristics, or on its programming, or on both. You can choose to focus on solving one or two particular missions, or you can focus on how your robot solved all the missions in the challenge. One of the things you need to keep in mind, however, is that the judges will have a limited amount of time to see what you've done, so you may want to concentrate your science fair project and display to one part of your robot that really shows the effort and innovation of your team!

What category should we be entered in?

How many people are on your team? If it is three or less, you should enter your project in the Engineering category. If you have more than three people on your team, you will be entering your project in the Large Team category.

What division should we be entered in?

If any of your team is in the 9th grade or higher, you must enter your project in the High School division, otherwise your team competes in the Middle School division.

What if the whole team does not want to participate in the science fair?

Since the project is a group effort, everyone on the team must agree that it can be entered in the science fair. At least two of your team must be willing to come to the Intel NWSE to compete in the judge interviews. Quite a bit of the judging criteria deals with teamwork, so the more members of your team who participate in judging, the better your scores will be.

How do we register to go to the Intel NWSE?

If your team is competing in the Middle School division, your project needs to be covered by the Middle School Super-EZ Guidelines, which are discussed on the Intel NWSE website's Middle School Teachers webpage.

<http://www.nwse.org/teachersMS.html> Only one form will need to be filled out for each team member if your project fits in these guidelines. The Middle School Teachers page has the whole registration process laid out.

Contact Jill Parisher at nwse_jp@pdx.edu for more information