

Royal Robotics

Lesson Plan – Design process

Step 4: Analyze and select solution

Once ideas have been presented, then the process of analyzing begins. Our team uses an evaluation board to look at each design concept and rate it as 1) doable within limits (game rules, safety, budget, etc.) and 2) meeting team goals, then the team votes on a final selection.

It is important to remember that just because only ONE idea can be chosen that does not mean the other ideas were bad, often when you get to competition you will find those ideas built by another team.

Step 5: Implement and Evaluate (test) solution

This is when CAD drawings are created; parts are purchased, built and assembled. In business, normally this would be where a final prototype would be created, tested, checked and rechecked, problems solved, then put into production. On a robotics team, this IS the manufacturing phase, our robots are basically prototypes, not finished products. This means the team spends a lot of time problem-solving as testing shows defects and imperfections. When this happens, it is back to step one because problem-solving is essentially applying the design process again to a specific part or procedure that isn't performing properly.

Design proposal forms

When doing the design process, our team breaks into smaller groups and brainstorms concepts. Then we check the rules and limits to see which concepts are doable. Groups make up a design proposal, using a set of forms – the first page is the whole robot concept, and additional pages are for sub-assemblies. These proposals will be presented to the team, then members will vote on a final concept.

Supplies: Design process posters, proposal forms

Info sources:

<http://robdkelly.com/blog/design/how-to-master-the-design-process-6-easy-steps/>

<http://iisme.org/etp/HS%20Engineering-%20Engineering.pdf>