The Engineering Design Process

Engineering Design Journal

Battle Bots

Name: ___________________________________________________

Classroom: ______________________
Background

This lesson is designed to teach students how to use the Engineering Design Process to create, invent, and find solutions to problems. This process can be used in all kinds of ways at school in science, math, writing, and more. This process helps us to think through problems, develop solutions, test, improve, and share.

The Battle Bot

Our objective is to use the materials to make a Battle Bot that is able to move on its own. We will battle our bots similar to how Sumo Wrestlers compete.
Materials

- 1 Cup
- 1 AA Battery
- 1 ft of 22 gauge red wire
- 1 ft of 22 gauge black wire
- Wire Nuts
- Paper Clips
- Bottle Caps
- Popsicle Sticks
- Hot Glue
- “Decorations”
- Electrical Tape
- Scotch Tape

Procedure

1. Follow The Engineering Design Process to plan, create, build, and test
   - Ask
   - Imagine
   - Plan
   - Create
   - Improve
   - Communication

2. Create plan
3. Have Mr. Lostetter Approve Plan:
   __________________

4. Build
5. Test
6. Improve
7. Finnish Packet: _________________ (Mr. Lostetter)
7. Battle!

Rules for Battle Bots

1. All Bots start in the center of the ring
2. Battle bots will run at the same time and will push others out through movement
3. You can rotate your battle bot if the “propeller” is stuck
4. You cannot change your bot’s position in the ring
5. If any part of you bot leaves the ring, you are out
6. Last bot in the ring wins
The Engineering Design Process

**ASK**
What is the problem? How have others approached it? What are your constraints?

**IMAGINE**
What are some solutions? Brainstorm ideas. Choose the best one.

**IMPROVE**
What works? What doesn't? What could work better? Modify your design to make it better. Test it out!

**PLAN**
Draw a diagram. Make lists of materials you will need and steps you will take.

**CREATE**
Follow your plan and create something. Test it out!
The Engineering Design Process

Ask

1. What is the problem?
2. What are some possible solutions?
3. What have others done?

Thinking about our battle bots… Ask…

What is the problem? What are we trying to design?
1. What are the possibilities
2. What else can be done?
3. What is the best solution

Thinking about our battle bots... Imagine:

**What are some possible solutions? (brainstorm)**
Plan

1. Is the plan possible?
2. Where should I start?
3. What materials are needed?

Thinking about our battle bots... Plan...

List the available materials:

- 
- 
- 
- 
- 
- 
- 
- 
- 
-
Plan

1. Is the plan possible?
2. Where should I start?
3. What materials are needed?

Thinking about our battle bots... Plan...

**Draw a prototype of your design**
Create

1. Can a model be made?
2. Have I followed the plan?
3. Does it meet the goal?

Note any changes to your plan you made during the building process of your battlebot
Improve

1. Does it work?
2. What will make it better?
3. What can be done differently?

Test your battle bot and think...

Did it work?

What happened during your test?

What changes do you need to make to your design?
1. Are changes needed?
2. What do others think?
3. Is the problem solved?

Share results...

Did it work? Did you solve the problem?

Compare to your design to someone else’s... What do you like about your design? What about their design?