

How to Think Like an Engineer



Mrs. Hoenshell
Science

Bellwork: Setup lab books. Complete the Ess? Using 3-4 complete sentences.

Essential Questions: How has your POV from yesterday changed about what is the engineering process? How does the process help to solve problems?

Think Time

What is the
engineering
process?

POV

What is the engineering process?

Write 2-3 complete sentences to describe what you think is the engineering process.

What is the
1st step?

Define the problem/goal

What is the
2nd step?

Literature
Review/Background
Research

What is the
3rd step?

Specify Requirements

What is the
4th step?

Brainstorm Solutions

What is the
5th step?

Sketch Design

What is the
6th step?

Build Prototype

What is the
7th step?

Test and Redesign

What is the
8th step?

Retest

What is the
9th step?

Communicate Results

Define the
problem.

You will be modeling a
water filtration system.
Why?

Define the problem.

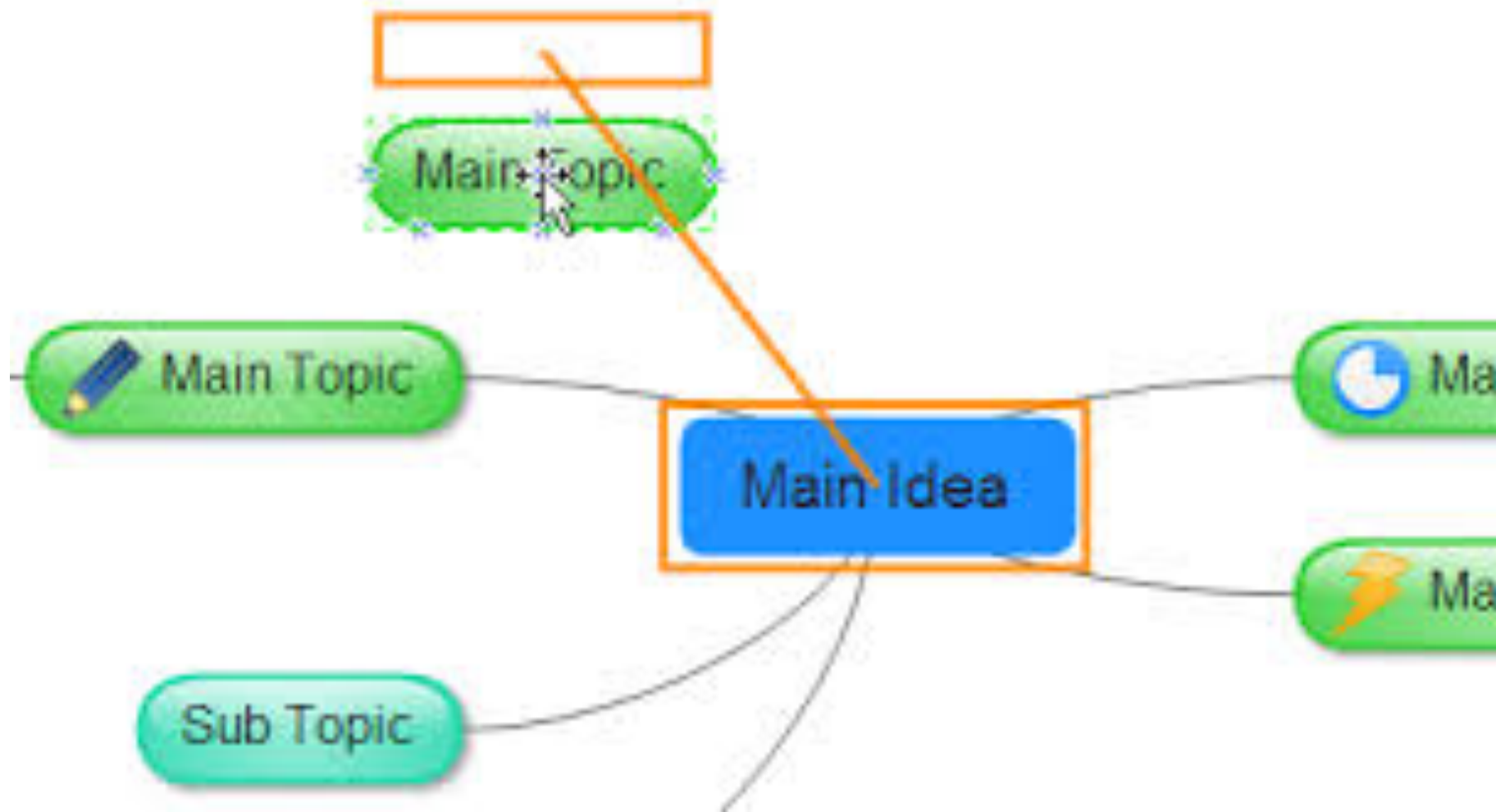
You will be modeling a wind powered car to simulate the power of a hurricane. Why?

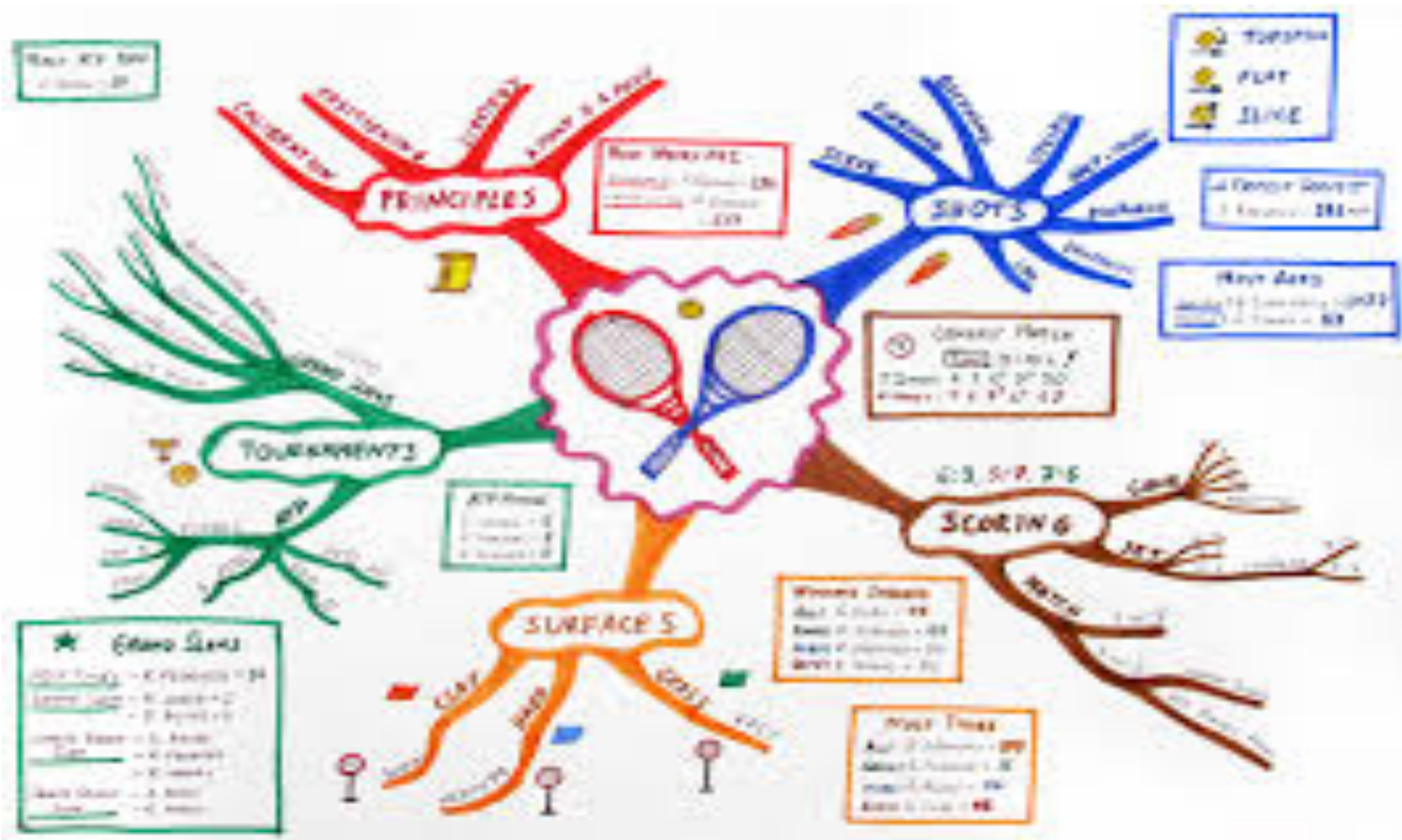
Day One	1 No Evidence	2 Approaching Proficiency	3 Proficient	4 Advanced
Defining the Problem—Students can identify the teams/partnership's goal for completing the design/prototype.	There is no evidence that the student can identify the problem.	Student needs help to answer the questions: What is the problem or need? Who has the problem or need? Why is it important to solve? .	Student can identify and answer all the questions from Score 2.	Along with 3, student actively looks for and suggests ways to identify the goal to help support team-mates struggling with identifying the problem or answering the questions.

Brainstorm

Use a mindmap tool to brainstorm your ideas for your prototype.

List as many variables you think you will have for your prototype.





Variable

Determine which variable
you are going to test.

Sketch

Design your prototype.

Label all the parts.

Identify the variable you will be testing.

	1 No Evidence	2 Approaching Proficiency	3 Proficient	4 Advanced
<p>Brainstorming— Students work as a team/partnership to brainstorm/mind map several designs.</p>	<p>There is no evidence the brainstorm handout is complete.</p>	<p>Student needs help to put their ideas down onto paper.</p>	<p>Student completed a mind map.</p>	<p>Pre-planning may include several ideas that were well thought out and ingenuity.</p>

Every Day	1 No Evidence	2 Approaching Proficiency	3 Proficient	4 Advanced
Safety	No evidence safety procedures were followed.	Most of the time, safety procedures are followed with being re-directed only once or twice.	All safety procedures are followed.	Student may provide ways to encourage others to follow safe procedures.
Materials	No evidence materials are used as intended.	Most materials used as intended and returned intact.	All materials used as intended and returned intact.	Student may provide ways to encourage others to use materials as intended and find ways to ensure materials are kept intact.
Following Instructions	No evidence instructions were followed as instructed	Most of the instructions were followed as instructed with needing redirection only one or two times.	All instructions followed.	Student find ways to improve the instructions. Adding additional ways to show higher levels of rigor.