Getting to know the EDP!

Tasks

Evaluation

Teachers Page

What do the Eiffel Tower, a toothbrush, and a Tesla have in common? The Engineering Design Process...that's what!

In this HyperDoc, we are going to learn more about what the Engineering Design Process (EDP) is and how to use it.

Click on the Tasks button on the lightbulb to proceed! Click here to watch a video of Mr. Swan to help navigate this HyperDoc.

We are going to complete the 4 tasks below.
Click on each task to take you to its procedure page.

1. I will compare and contrast the scientific method and the Engineering Design Process.

2. I will choose a video that highlights approaches to the Engineering Design Process.

3. I will reflect on how to use the Engineering Design Process to solve a problem.

4. I will know the six steps of the Engineering Design Process for Mr. Swan's class.

Scientific Method versus The Engineering Design Process

The *Scientific Method* is defined as a method of research in which a problem is identified, relevant data is gathered, a hypothesis is formulated from this data, and the hypothesis is tested...As you run experiments, you can change your guess, or hypothesis, to fit your results.

**adapted from ducksters.com*

Innovation!

The *Engineering Design Process* is a series of steps that guides engineering teams as they solve problems. The design process is iterative, meaning that they repeat the steps as many times as needed, making improvements along the way as they learn from failure and uncover new design possibilities to arrive at great solutions.

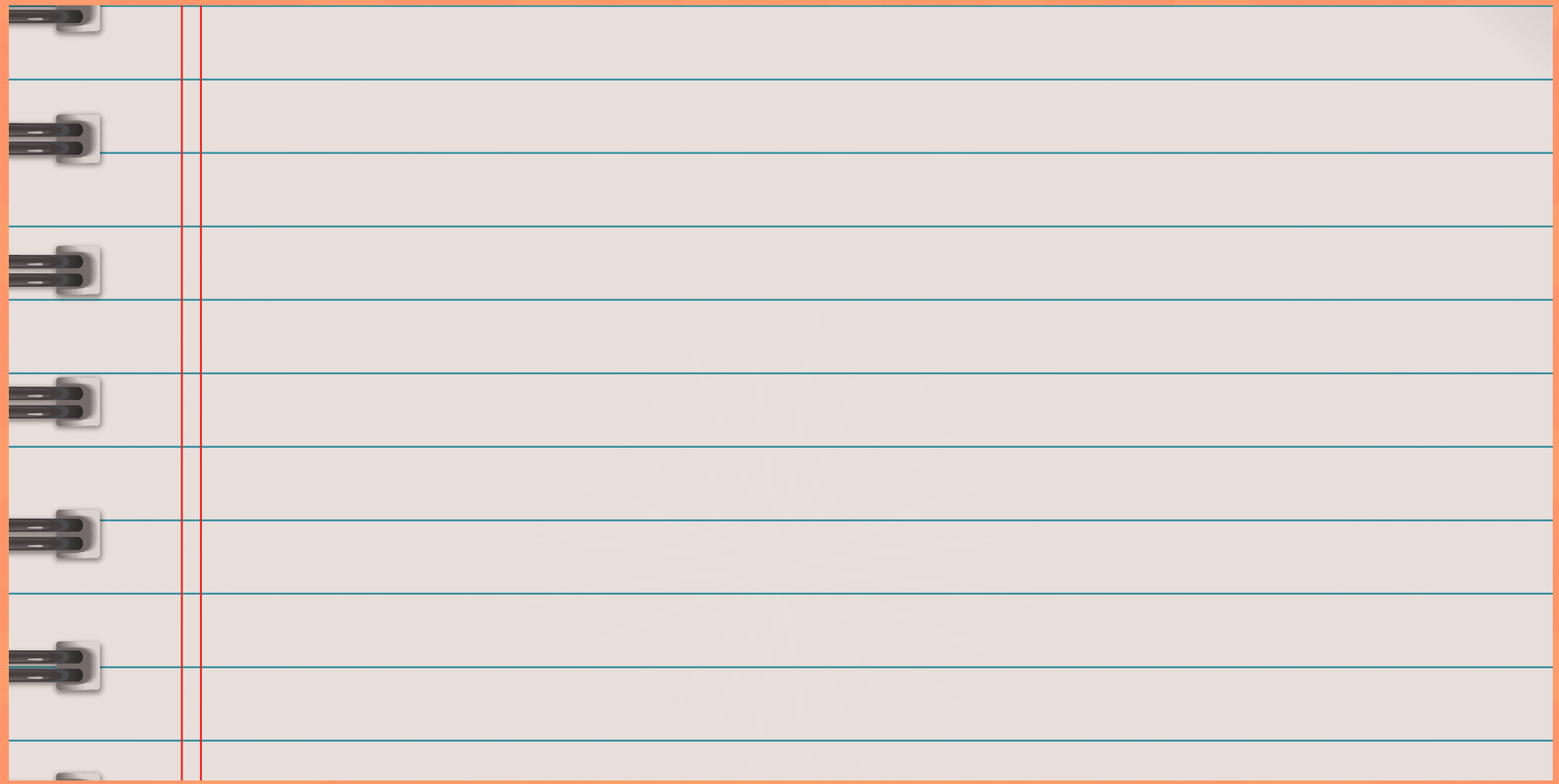
**adatpted from TeachEngineering*

Back to Tasks

Click on a video below and watch to learn more about the Engineering Design Process.

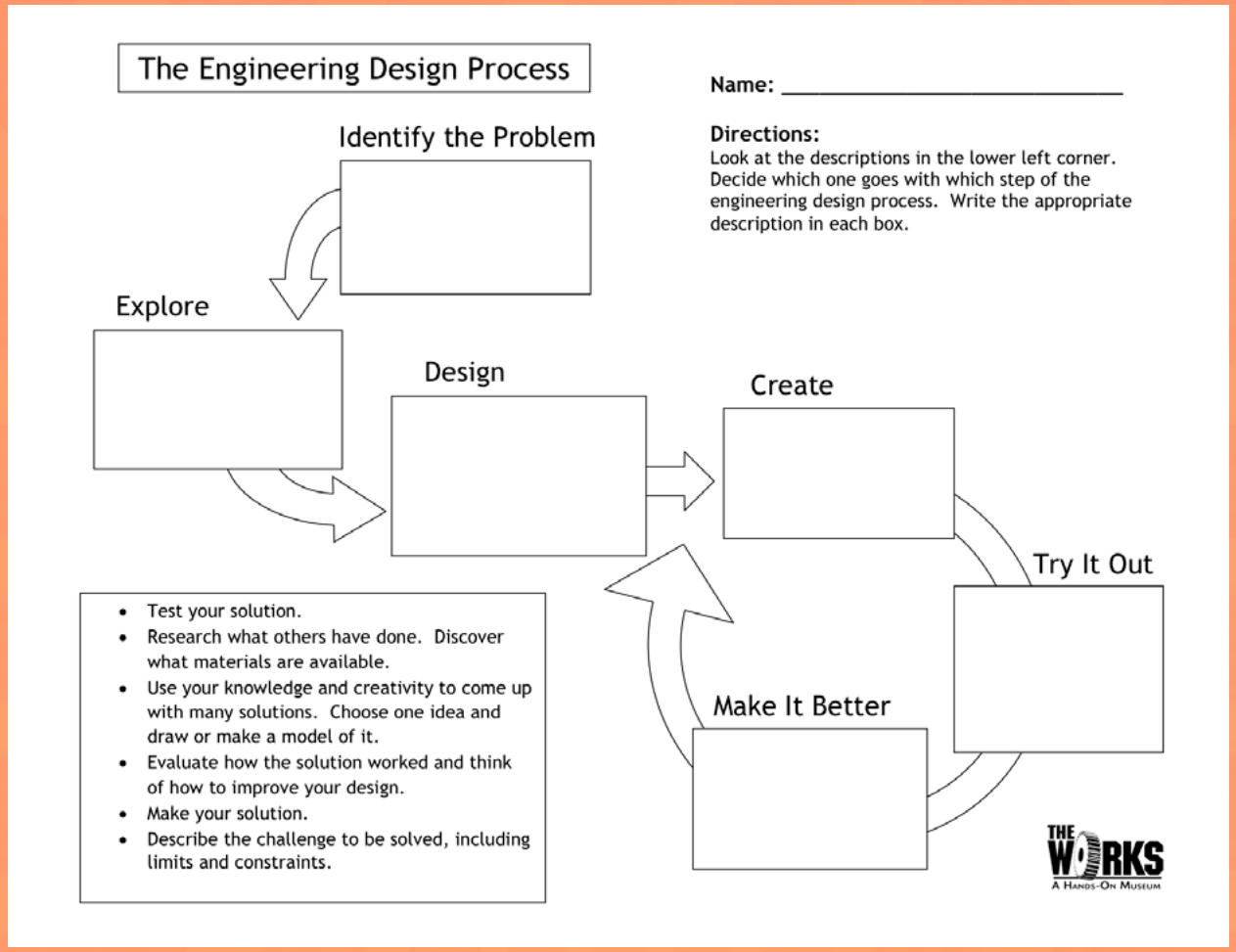
Back to Tasks

Click on the notepad below and reflect on a real-world problem that you would like to solve.



Back to Tasks

Below is a picture of the Engineering Design Process graphic organizer that you will be filling out and turning into Mr. Swan for a grade. You can type in it if you would like. Hover your cursor over the text box and click to begin typing. Also, feel free to compare your work with your neighbors.



Evaluation

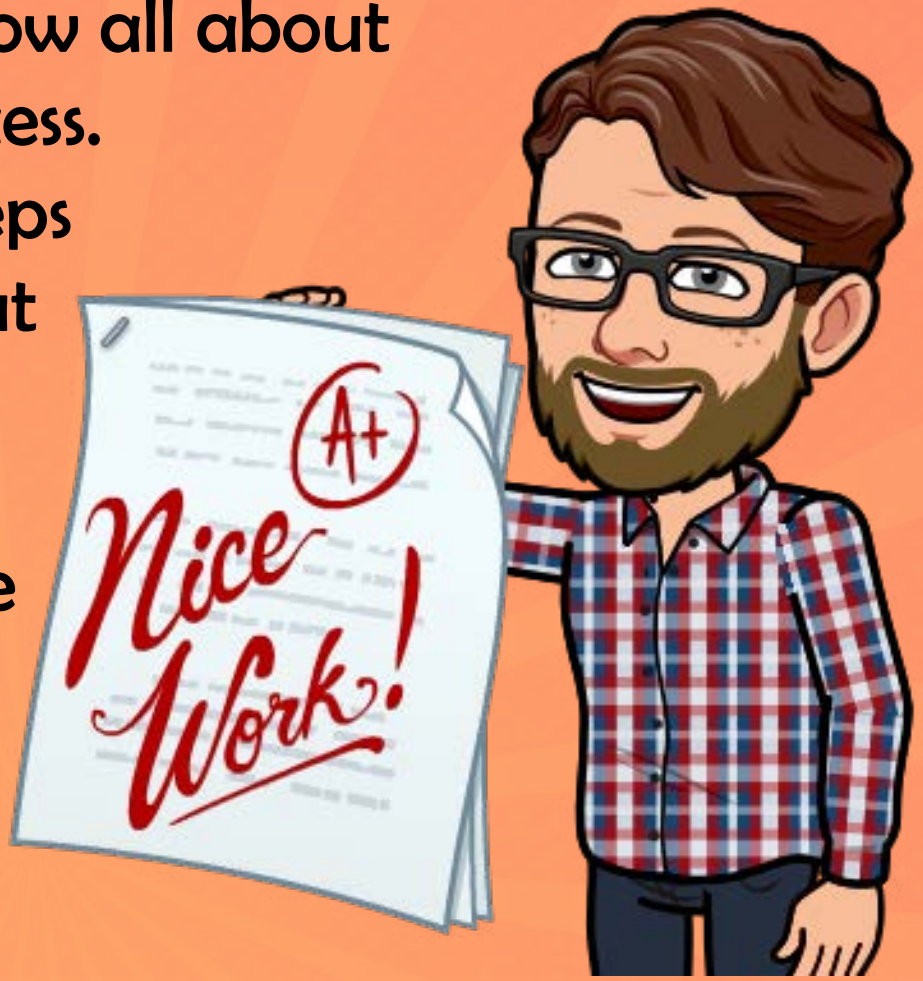
Review the checklist below to assess if you have completed each of the assigned tasks. Click the box next to each task to place a checkmark in it as you complete them. After you have checked off each task, come see Mr. Swan.

- [ ] I compared and contrasted both the Scientific Method and the Engineering Design Process.
- [ ] I watched video(s) to gain a better understanding of the Engineering Design Process.
- [ ] I wrote a reflection explaining how I would use the Engineering Design Process to solve a real-world problem.
- [ ] I looked over the Engineering Design Process (EDP) worksheet to better understand how to complete my EDP graphic organizer.

Back to Home

Conclusion

Awesome job! Now you know all about the Engineering Design Process. We will be using these six steps on many projects throughout the semester. So make sure you know them well!
If you finish this lesson before the period ends, see Mr. Swan for your enrichment activity.



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Teachers Page

Teachers Page

Overview: This HyperDoc is designed for my 7th and 8th grade students to introduce and reinforce the six steps of the Engineering Design Process (EDP) that I use in my class. The EDP is a critical concept to understand in my class and it is important for my students to understand what I expect regarding the EDP because it varies from application to application.

Timeframe: This HyperDoc and corresponding Graphic Organizer the students complete take up the better part of 2 class periods. If the student finishes early, for enrichment they will be instructed visit The Henry Ford website, watch videos detailing various innovators and the projects they work on. There will also fill out a form answering a few questions about what innovator(s) they studied and what they learned by watching and listening to the videos.

Material/Resources: Computer (computer lab), Internet Access, HyperDoc, Office 365 (OneNote), Graphic Organizer, and The Henry Ford Questionnaire

Differentiation: Headphones for Read Aloud (Browser) and OneNote (Immersive Reader). The Henry Ford website has transcripts of all the interviews and video clips. The Questionnaire is optional, so students that need extended time, will have the time they need. Also, any work on the HyperDoc can be accessed and worked on beyond class time.

GA Standards:

MSENGR-II-1: Students will learn the concept of invention and innovation.
c) Examine the role that Engineering & Technology and society play in the invention and innovation process
d) Identify an important past invention or innovation

MSENGR-II-3: Students will demonstrate engineering design and problem-solving skills.
c) Describe the steps of the Engineering Design Process

Teachers Page

MSENGR-II-5: Students will examine the impacts of inventions and innovations on society.
b) Investigate important inventions or innovations related to Engineering and Technology and how they have impacted our lives.

ISTE-S Standards:

Innovative Designer
4a) Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.

Computational Thinker
5c) Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

Click here to check out Mr. Swan's STEM website, Mr. Swan's STEAM Machine!