INDEPENDENT STUDENT LEARNING AT HOME

LESSON 1: Understanding Design

TODAY I WILL LEARN…
How do inventors come up with ideas of what to invent? How do they create their inventions? All inventors follow steps called the Invention Process. This process will guide you in creating your own invention, from identifying a problem, brainstorming a solution, and designing a prototype (model) of your idea. Today, you will learn the steps of the Invention Process and be able to explain them. Then, you will practice as you build a paper aircraft.

MATERIALS

Resources Provided by YIP:

- Video: Understanding Design – Guided Instructions
- Slide Deck: Understanding Design
- Video: The Henry Ford's Innovation Nation: Soccer Ball That Generates Energy https://www.youtube.com/watch?v=0gifXci-FUk
- PDF: Steps of the Invention Process
- PDF: Paper Aircraft Activity Guide (*Note: Different worksheets for Grades K-3 and Grades 4-8.*)

Materials from Home:

- Pens/pencils
- Two types of paper (printer, notebook or construction) for aircraft
- Paper clips (large and small) representing passengers (can also use coins, Lego figures, dried beans, or other small objects)
- Tape (if using small objects listed above)
- Space for testing aircraft

INVENTOR PLAN

Instruction: Understanding Design

1. Watch Video: Understanding Design – Guided Instructions. Refer to Slide Deck if needed for review.
2. Watch Video: The Henry Ford's *Innovation Nation*: Soccer Ball That Generates Energy (link: https://www.youtube.com/watch?v=0gifXci-FUk, 3:50 minutes).
3. Ask yourself: "What steps of the Invention Process were highlighted and how did Jessica approach them?"
4. Draw your own pictures (icons) to represent one or all of the steps of the invention process.

At Home Activity: Paper Aircraft

1. Download the PDF: Paper Aircraft Activity Guide.
   Note: There is a guide for grades K-3 and a guide for Grades 4-8.)
2. Draw a design of your paper aircraft. Think of the features you want it to have.
3. Build your aircraft using the materials you have (see materials list)
4. Test your aircraft. What are the problems you see?
5. Make changes to your aircraft. Re-draw your design and re-build your aircraft.
6. Test again.
7. Show your aircraft to someone at home and explain how you made changes to improve the original design. Talk about any roadblocks you had, the most challenging part of the process, and what you might do differently if you did this activity again.

CHECK AND REFLECT

1. Name the part of the Invention Process that you feel is most challenging and then to name the step that you are most excited about.