

## TEACHER DIRECTED LESSON PLAN

### LESSON 4: Documentation and Journaling

#### LESSON OVERVIEW

In this lesson, students will explore their YIP Inventor's Journal and understand its value in the invention process. They will understand how to document and record their invention process and learn the importance of keeping accurate details. Students will be introduced to the concept of a patent and how it protects ideas from theft. Finally, they will understand how to use their YIP Inventor Journal as a record keeping tool as they design their invention.

#### OBJECTIVE

Students will be able to understand how a patent protects an inventor and her/his invention and research patents to determine if an invention already exists. Students will understand the organized steps in logging ideas and research in the design process. Students will understand how to utilize the YIP Inventor's Journal.

#### MATERIALS

##### Resources For the Teacher:

- Slide Deck: Documentation and Journaling (*optional*)
- Script: Documentation and Journaling (*accompanies slide deck, optional*)
- Video: USPTO *Science of Innovation*  
[https://www.youtube.com/watch?v=3T-NBDGovno&feature=emb\\_logo](https://www.youtube.com/watch?v=3T-NBDGovno&feature=emb_logo) (6:56)
- YIP Inventor's Journal (hardcopy or digital format)
- Worksheet: Who Invented the Telephone?
- Worksheet: Teach Me S'more (*optional*)
- Proving Behavior Activity (materials needed will be determined by activity selected)
  - 💡 Writing Prompt- pens or pencils, notebook paper
  - 💡 Big Paper List- large sticky notes or white board space, markers
  - 💡 Snowball- pens or pencils, notebook paper
- Rubric: YIP Inventor's Journal (*optional*)

##### Materials For Students:

- Pens/pencils
- Notebook or other paper for writing and drawing
- YIP Inventor's Journal (hardcopy or digital format)
- Who Invented the Telephone? worksheet
- Teach Me S'more worksheet (*optional*)
- Ingredients for making a s'more (2 graham crackers, marshmallow, piece of chocolate) (*optional*)
- Glue or tape (*optional*)

## INSTRUCTION & ACTIVITIES

**Teacher may lead the following lesson plan with flexibility to adapt as needed to fit technology and class format:**

*Note: Teacher may choose to use the digital YIP Inventor's Journal in place of or along with the hardcopy of the YIP Inventor's Journal or use another logbook of their own. Logbooks of some kind are required for submission to the Northern New England Invention Convention and the Invention Convention US Nationals.*

### **Teacher Instruction:**

1. *Teacher may use slides and script to explain the Documentation and Journaling process or lead instruction and discussion on their own.*

Teacher will share Slide Deck: Documentation and Journaling with the class and use script as needed.

Teacher will begin with a discussion about the importance of documenting the invention process and explain that students will need to record their work throughout their own invention journey. Teacher will refer to the YIP Inventor's Journal.

*Note: Journals should already have been distributed; hard copies are available for all students or teacher may use the digital YIP Inventor's Journal throughout the YIP program.*

2. Teacher will explain that a patent protects an inventor from having his or her idea stolen or used by someone else. A patent is a document issued by the Patent and Trademark Office. It gives the inventor rights to his or her invention. The patent gives the inventor the right to prevent anyone else from making, using, or selling the invention without his or her permission. A patent lasts for 20 years and when it expires, anyone can produce the product without paying the inventor.
3. Teacher will show the video: USPTO *Science of Innovation*. (Link: [https://www.youtube.com/watch?v=3T-NBDGovno&feature=emb\\_logo](https://www.youtube.com/watch?v=3T-NBDGovno&feature=emb_logo) 6:50 minutes. Video included in slide deck.). Teacher will explain more about the patent and the patent process. Teacher may choose to lead a short discussion or prompt questions following the video.
4. Teacher will read *Who Invented the Telephone?*, the story of Alexander Graham Bell, or ask students to read the story on their own. Teacher will lead a short class discussion and ask students the following:
  - Why did Bell's patent hold up through time?
  - What other items do you associate with famous inventors? Are they the "real" inventors?
5. Teacher will explain the essential elements of documentation in an invention journal and instruct students on how to record their process in their own journals. Teacher will ask students to take turns reading through the suggested guidelines for keeping a good YIP Inventor's Journal. (Teacher may share screen of slides so that students can read directly from it.) Or teacher may choose to read the guidelines. (Teacher may alter the list as needed.)

6. Teacher will guide students through the YIP Inventor's Journal. Teacher may choose to highlight specific pages that students must complete, show students where to add their signature and date each day, where and how to draw design sketches and how to label them, etc. (Include examples on slides.)

*Note: Throughout the course of completing YIP and working on their own invention projects, the students should complete the YIP Inventor's Journal. Teachers should train students to write in their YIP Inventor's Journal or alternative invention logbook whenever they are working on or even thinking about their inventions. They can also write on notebook paper and staple it to the journal later.*

### **Student Proving Behaviors:**

Recommendations for In-Class Learning (select one or all of the following):

1. Writing Prompt-In response to the story about Alexander Graham Bell, ask students to respond to question: How did Bell's patent hold up through time?
2. Small Group Discussions- Divide the class into small groups. Ask the groups to discuss the reasons why it is important to document the invention process from start to finish and why an invention logbook is important. Bring all groups together at the end to share their ideas as a class.
3. Big Paper List- Divide the class into small groups. Give each group a large sticky note. Ask the groups to make a list of the essential elements in an invention logbook. Then, ask each group to post their list for the rest of the class to see. Give each group an opportunity to share their ideas. Finally, condense the lists into one class list that can be used as reference throughout the Young Inventors' Program.
4. Snowball- Ask students to write one requirement that they remember must be included as they complete their YIP Inventor's Journal on a piece of paper. Have everyone ball up their paper and then throw it across the room. Each student will pick up someone else's snowball and then read it aloud to the class in a group share.

### *Ideas for Virtual Instruction:*

1. *Teachers may create a Class Journal using a blog, or other sharing platform. This journal can be a place where students can share how their projects are progressing. We recommend that teacher set guidelines for how this blog should be used appropriately by the class.*
2. *In response to the story about Alexander Graham Bell, teachers may ask students to create individual short presentations on the Bell story, in which they address the question: How did Bell's patent hold up through time?*
3. *In response to the story about Alexander Graham Bell, teachers may ask students to respond to question: How did Bell's patent hold up through time in a writing assignment.*

### **Activity: Teach Me S'more**

**Students will need:** *Pen or pencil, Ingredients for making a s'more (optional; substitute other materials if using alternative task in activity), OR Teach Me S'more worksheet , glue/tape (optional, may be done as alternative activity)*

1. Teacher will ask students to explain to a friend how to make a s'more (omit the step of toasting the marshmallow to avoid the need to use fire or other heat source). The student explaining should

consider what steps they go through to build the treat. They should imagine that the friend doesn't have any idea what a s'more is or how to make it. The partner building the s'more may only follow the instructions given by the student explaining exactly as stated and should not make assumptions or move ahead in building until told to do so. (Example: if the chocolate candy is wrapped, the student explaining should include in the instructions that the candy must be unwrapped before placing on s'more. If this step is not said specifically, the student building the treat should not unwrap the candy. The goal is to be thorough and complete in describing ALL steps of the s'more making process- just as if someone is following a recipe in a cookbook or instructions in a Lego kit.)

2. Teacher should follow-up with a reflection. What were the students' experiences giving instructions and building the s'more. What was challenging in this exercise? Did the partner build the s'more correctly? Ask students to think about steps such as breaking the chocolate or the graham cracker into smaller pieces? And how many chocolate pieces or grahams are to be used? Is the marshmallow squished before adding it? Were the students detailed in their instructions or were steps assumed and left out?

*Note: Alternative Activities to substitute for s'more making include: build a sunbutter and jelly sandwich, tie a shoe, draw a house.*

*Ideas for Virtual Instruction:*

1. *Teacher may replace the s'more with another example (such as drawing a house) so that only a pencil and paper are required.*
2. *Teacher may choose to set up pairs to work virtually by Zoom Breakout room, or other virtual platform, so that one student gives s'more instruction and one student is the s'more maker. Teacher may prepare students to be able to make real s'mores at home by asking them to have ingredients available.*
3. *Ask students to write down their instructions for making a s'more step by step. Collect the instructions and then redistribute them so that each student gets a set of instructions written by a classmate. Ask the students to build a s'more at home using those instructions or to draw what the s'more would look like based on the instructions given. Students making or drawing the s'more should label the components when they are finished.*
4. *Provide the Teach me S'more worksheet, with pictures of s'more ingredients that students can cut out at home. Then students can build their s'more with the cut out components as they follow instructions, either verbal or written, by a peer. Students making or drawing the s'more should label the components when they are finished.*
5. *Ask students to complete the activity at with someone at home. The student will give the instructions for how to make a s'more and the person at home must build it based on these instructions.*

#### **CHECK FOR UNDERSTANDING**

***Teacher may wish to do one of the following to check for understanding:***

1. In the format of the teacher's choice, ask students to share their experience writing instructions and watching their partner make the s'more. What was challenging in this exercise? Did the partner

build the s'more correctly? Were the students detailed in their instructions or were steps assumed and left out?

2. In the format of the teacher's choice, ask students to name one guideline they remember about documenting their invention process in their YIP Inventor's Journal.
3. In the format of the teacher's choice, ask students to write down one question they have about how they should use their YIP Inventor's Journal.