Get That Plane
A STEM Read lesson based on
The Boy and the Airplane by Mark Pett

Overview
In The Boy and the Airplane, the boy must figure out how to get his plane off of a roof. In this engineering challenge, students will design an invention that will get things off of roofs. Using the Engineering Design Cycle, students will design, discuss, and explain their inventions.

Grade(s): P ☐ K ☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☒ 10 ☐ 11 ☐ 12 ☐

Suggested Time Frame: One session

Standards

| K-2-ETS1-1 | Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. |
| K-2-ETS1-2 | Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. |
| SL.K-2.1.a. | Follow agreed-upon rules for discussions |
| SL.K-2.1.4 | Describe people, places, things, and events with relevant details expressing ideas and feelings clearly. |
| SL.K-2.1.6 | Produce complete sentences when appropriate to task and situation. |

Objectives
At the conclusion of the lesson, students will know or be able to
• Describe sequence of events in a story.
• Discuss ideas for inventions that will get an object off of a roof.
• Name the steps in the Engineering Design Cycle.
• Design an invention for a specific task.
• Describe the invention in complete sentences.
Key Terms

Engineering Design Cycle – steps engineers follow to design and build solutions to a wide variety of problems. The engineering design cycle helps engineers come up with the best solutions to problems.

Materials

- *The Boy and the Airplane* by Mark Pett
- Drawing paper
- Crayons, markers, or colored pencils

Procedure

1. Preparation – Create a poster or other visual of the Engineering Design Cycle.

2. Share the storybook with the children.
3. Ask students what problem the boy had to overcome in the story. Ask students, “How did the airplane get stuck on the roof?”

4. Discuss ways and types of inventions that could retrieve the airplane from the roof.

5. Using the poster, explain the steps of the Engineering Design Cycle.

6. Divide students into small groups. Tell students that they are going to design their own invention that could retrieve the airplane from the roof.

7. As students work, ask them how they are following the Engineering Design Cycle as they create their inventions.

8. Have students explain their designs to the class. Encourage students to use complete sentences.

9. Ask some reflection questions.
   a. What materials would you use to build your invention?
   b. What parts of your invention would be easy to build?
   c. What parts of your invention would be difficult to build?
   d. How could you improve your design?
   e. How else could you use this invention?

10. If time allows, give students an opportunity to make changes to their designs.

**Extensions**

1. Provide construction materials for students to build their inventions. Materials might include, cardboard, craft sticks, chenille stems, duct tape, masking tape, newspaper, plastic cups, paper plates, plastic spoons and forks, construction paper, and yarn.

2. Have students draw an illustration, for the book, that shows the boy using the invention they designed.

3. Have students write a few sentences about how to use the invention.

**Considerations**

N/A
## Assessments

Use or adapt the attached rubric

<table>
<thead>
<tr>
<th></th>
<th>Exceeds (3)</th>
<th>Meets (2)</th>
<th>Partially Meets (1)</th>
<th>Does Not Meet (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
<td>Student listens carefully and respectfully all of the time. Student shares several meaningful and appropriate comments or ideas.</td>
<td>Student listens carefully and respectfully most of the time. Student shares one or two meaningful and appropriate comments or ideas.</td>
<td>Student listens some of the time. Student shares one comment that may or may not have been meaningful or appropriate.</td>
<td>Student does not listen and does not participate or may be disruptive during the discussion.</td>
</tr>
<tr>
<td>Engineering Design Cycle</td>
<td>Student is able to name all parts of the design cycle without prompting.</td>
<td>Student is able to name all parts of the design cycle with minimal prompting.</td>
<td>Student requires extensive prompting to name the parts of the design cycle.</td>
<td>Student is unable to name the parts of the design cycle.</td>
</tr>
<tr>
<td>Invention</td>
<td>Invention is creative, carefully drawn, and appropriate for the purpose.</td>
<td>Invention is adequately drawn and appropriate for the purpose.</td>
<td>Invention is poorly drawn and not appropriate for the purpose.</td>
<td>No invention is drawn.</td>
</tr>
<tr>
<td>Explanation</td>
<td>Explanation is clear, organized, and focused on the invention. All sentences are complete.</td>
<td>Explanation is focused on the invention. Most sentences are complete.</td>
<td>Explanation is unfocused. Few sentences are complete.</td>
<td>Student is unable to explain the invention.</td>
</tr>
<tr>
<td>Total</td>
<td>N/12</td>
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