How Tall?
A STEM Read lesson based on
The Boy and the Airplane by Mark Pett

Overview
In The Boy and the Airplane, the boy’s airplane gets stuck on a roof. He is not tall enough to retrieve it and cannot do so with a ladder or other objects. In this lesson, students will compare items by their heights.

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

Suggested Time Frame: One session

Standards

<table>
<thead>
<tr>
<th>K.MD.3</th>
<th>Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. Limit category counts to be less than or equal to 10.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.MD.2</td>
<td>Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.</td>
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<tr>
<td>1.MD.4</td>
<td>Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.</td>
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<tr>
<td>2.MD.1</td>
<td>Measure the length of an object by selecting and using appropriate objects such as rulers, yardsticks, meter sticks, and measuring tapes.</td>
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<tr>
<td>2.MD.4</td>
<td>Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.</td>
</tr>
<tr>
<td>SL.K.2.1</td>
<td>Participate in collaborative conversations with diverse partners about grade kindergarten-2 topics and texts with peers and adults in small and larger groups.</td>
</tr>
</tbody>
</table>

Objectives
At the conclusion of the lesson, students will know or be able to
- Determine different objects that can help retrieve an unreachable object.
- Collaboratively measure the objects using grade appropriate objects.
- Compare the objects by height.
- Categorize the objects by height.
Key Terms

**Height** - the distance from the bottom of something to the top

**Measure** - to find out the size, length, or amount of something

Materials

- *The Boy and the Airplane* by Mark Pett
- An object such as a small toy or school supply (first and second grade one for each group)
- Chalkboard or white board
- Various items to use to retrieve the object such as a yardstick, a ruler, a pencil, a length of rope, a lanyard, a folder, a lunchbox, etc.
- Grade appropriate measurement objects such as a length of yarn, a piece of paper, or a ruler
- T-chart, attached
- Paper and pencil

Procedure

1. Read and discuss *The Boy and the Airplane* by Mark Pett. Focus on the fact that nothing was tall enough to reach the airplane stuck on the roof until he was able to climb the tree.

2. Discuss the key terms.

For first and second grade

1. Divide the class into groups. Give each group an object and help them place it on a shelf that is out of reach.

2. Show the students all the items the class will use to try to retrieve the object. List each item on the board. Ask students to predict which will be able to reach the object. They should each record their own predictions on a separate piece of paper. Explain that the objects will be in a central area and after they finish with each object, they need to bring it back to that area before they can take a new object.

3. Show students the measurement objects and demonstrate how to measure each object. Explain that they will first measure the item being used and record the height. Then, test each item to determine if the item can retrieve the object that is out of reach.

4. After each test, students should categorize the item on the t-chart. On their prediction papers they should circle the item if it reached or cross off the item if it did not reach.

5. Gather back as a class and compare each groups’ results.
For kindergarten

1. Remain as a whole group.

2. Show students the object you chose. Place the object on a shelf or other area that puts it out of reach of the students. Ask students for ideas they have of how to get the object down. If they name items other than those you already collected to retrieve the object and they are on hand, gather those as well.

3. Show the class all the items they will be using to reach the object. Explain that the class will be experimenting with these items to try and retrieve the object that is out of reach. Ask for predictions as to which items will reach the object.

4. For each item being used, have a student help test if it is long enough to reach the object. Hold up two objects at a time and ask students to compare them by height. Ask for further predictions based on the previous items tested. Either recreate the t-chart on the board or use an overhead. Categorize each item on the t-chart.

5. Discuss the results, the predictions, and the height comparison of the items used. Ask students which item was the longest and which was the shortest.

Extensions

1. Writing/drawing prompt – I could reach the airplane on the roof if I had ________________.

2. Compare students’ height and reach.

3. Categorize the items in different ways, such as, longest to shortest.

Considerations

Follow all safety precautions.

Assessments

Use or adapt the attached rubric
# 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><strong>Collaboration</strong></td>
<td>Worked well with others and discussed ideas in a fair, respectful, encouraging way and was considerate of the feelings of others.</td>
<td>Worked okay with others and discussed ideas in a fair, respectful way, but may not be encouraging. Considered the feelings of others.</td>
<td>Worked with others but did not contribute a fair share of work OR was discouraging and did not consider the feelings of everyone.</td>
<td>Did not participate or discussed ideas in an unfair, disrespectful way.</td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
<td>Student was able to correctly and accurately measure each item and record the measurement.</td>
<td>Student was able to correctly and accurately measure each item.</td>
<td>Student was able to correctly measure some items.</td>
<td>Student was not able to correctly measure the items.</td>
</tr>
<tr>
<td><strong>Categorization</strong></td>
<td>Student was able to correctly categorize all items, and recorded each properly</td>
<td>Student was able to correctly categorize all items.</td>
<td>Student was able to correctly categorize some items.</td>
<td>Student was not able to categorize the items.</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>Student participated actively and contributed ideas to the class.</td>
<td>Student participated but only contributed one idea to the discussion.</td>
<td>Student paid attention but did not participate or contribute ideas to class.</td>
<td>Student did not pay attention or contribute ideas to class.</td>
</tr>
<tr>
<td><strong>Total N/12</strong></td>
<td></td>
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## How Tall? T-Chart

<table>
<thead>
<tr>
<th>Able to Reach Object</th>
<th>Not Able to Reach Object</th>
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<tbody>
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