



## Tuva Jr. Lesson Instructional Design Guide for Partners V2

### Purpose

The purpose of this document is to provide Tuva Jr. partners with guidance when designing activities using the Tuva Jr. tools and datasets. Specifically, it will help partners to structure their prompts in a format that is pedagogically consistent with Tuva Jr.

### How to Use

The left-hand column lists actions that someone creating an activity may engage in. The right-hand column provides context, instructions, and preferred formatting and terminology. If you are unfamiliar with the terms used, please refer to the [Tuva Jr. Dictionary](#) (also in the Partner Resources section) for definitions of terms used below.

## Tuva Jr. Lesson Instructional Design Guide


### Tuva Jr. General Guidelines




- Use the following language to define data literacy terms during a lesson.
  - *Attributes describe something.*
  - *Attributes are variables that describe a case. Their values are categorical or numerical.*
  - *If the attribute is described by words, it is a **categorical** attribute. Each description represents a category or group.*
  - *If an attribute is described by numbers, it is a **numerical** attribute. Each number represents a measured value for that attribute.*
  - *The **range** of the data is the difference between the lowest and highest values.*
  - ***Variability** describes the **range** of the data and where it tends to lump together.*
- Use *italics* for emphasis or distinction
  - What is one *similarity* you notice...?
  - What is one *difference* you notice...?
- Use **bold** for keywords that can be found under **Vocabulary**.
- Use **bold** for on-screen labels (**Play View, Play Area, and Plot View**). This should be for anything that we use title case treatment.

- The initial lessons with Tuva Jr. should refer to the dataset as the deck and data points as cards. As students transition from Play View to Plot View we help them make the concrete to abstract transition by explicitly calling out the similarities and differences.
- Use an image in the student introduction if possible to help students recognize that each card (case) represents a real thing.
- The graph type names are: Bar Chart, Pie Graph, Line Graph, Dot Plot, and Map.
- Multiple Choice: Offer 3 choices unless 4 choices makes more sense (e.g. 4 categories)

<p>How to...</p> <p>write a teacher-led INTRODUCTION</p>	<p>Describe the deck (dataset). Prompt background knowledge or interest in the dataset related to the lesson purpose.</p> <ul style="list-style-type: none"> <li>• This deck (dataset) contains &lt;#&gt; cards. Each card contains attributes about &lt;dataset&gt;. <ul style="list-style-type: none"> <li>○ <i>This deck contains 20 cards. Each card contains attributes about one ocean animal.</i></li> </ul> </li> <li>• Prompt background knowledge. <ul style="list-style-type: none"> <li>○ <i>Attributes describe something. Think about the words and numbers you would use to describe ocean animals.</i></li> <li>○ <i>What do you already know about animals that live in or near the ocean?</i></li> </ul> </li> </ul>
<p>How to...</p> <p>describe initial actions in PLAY VIEW</p>	<ul style="list-style-type: none"> <li>• Let's look at the attributes for &lt;dataset&gt;.</li> <li>• Drag and drop two <b>Cards</b> in the <b>Play Area</b>. Read the attributes for each.</li> </ul>
<p>How to...</p> <p>ask open-ended QUESTIONS in PLAY VIEW</p>	<ul style="list-style-type: none"> <li>• How are the &lt;cases&gt; similar? <ul style="list-style-type: none"> <li>○ <i>How are the animals similar?</i></li> <li>○ <i>How are they different?</i></li> </ul> </li> <li>• Now, choose new cards to compare until you feel familiar with the deck.</li> </ul>
<p>How to...</p> <p>group in PLAY VIEW</p>	<p>The purpose of noticing here is to describe what the action did and confirm that the action was performed correctly.</p> <ul style="list-style-type: none"> <li>• Under <b>Group Cards By</b> choose &lt;attribute&gt;. You will notice each card is sorted by &lt;attribute&gt;. <ul style="list-style-type: none"> <li>○ Under <b>Group Cards By</b> choose <b>Class</b>. You will notice</li> </ul> </li> </ul>

<p>order in PLAY VIEW</p>	<p><i>each card is sorted into one of four classes.</i></p> <ul style="list-style-type: none"> <li>• Under <b>Order Cards By</b> choose &lt;attribute&gt;. You will notice each card is ordered on the number line by &lt;attribute&gt;. <ul style="list-style-type: none"> <li>◦ Under <b>Order Cards By</b> choose <b>Weight (grams)</b>. You will notice each card is ordered on the number line from smallest to largest weight.</li> </ul> </li> </ul>
<p>How to...</p> <p>transition from PLAY VIEW to PLOT VIEW</p>	<p>To move from Play View to Plot View the user must complete a grouping or ordering action first. This action will provide the graph starting plot in Plot View. When transitioning from PLAY VIEW to PLOT VIEW, prompt the user to notice the similarities and differences. The purpose of noticing here is to help students make connections between the concrete cards and the abstract data points.</p> <ul style="list-style-type: none"> <li>• Notice that the data points are arranged the same way as in <b>Play View</b>. But, the cards are now dot icons.</li> <li>• We call these data points. Click on one of the data points.</li> <li>• On the left side of the screen you can now see all the attributes for that &lt;case&gt; in their <b>Case Card</b>. The <b>Case Card</b> has the same information as the &lt;case&gt; card in <b>Play View</b>.</li> <li>• You can also scroll through the cases (cards) using the arrows next to the <b>Case Card</b> heading. <ul style="list-style-type: none"> <li>◦ Notice that the data points are arranged the same way as in <b>Play View</b>. But, the cards are now cat icons.</li> <li>◦ We call these data points. Click on one of the data points (cat icons).</li> <li>◦ On the left side of the screen you can now see all the attributes for that pet in their <b>Case Card</b>. The <b>Case Card</b> has the same information as the pet's card in <b>Play View</b>.</li> </ul> </li> </ul>
<p>How to...</p> <p>Give graphing instructions in PLOT VIEW</p>	<ul style="list-style-type: none"> <li>• Let's compare &lt;attribute&gt; of each item by &lt;attribute&gt;. <ul style="list-style-type: none"> <li>◦ Let's compare the total <b>Count</b> of each type of item by <b>Location</b>.</li> </ul> </li> <li>• From the toolbar, select &lt;graph type&gt;. <ul style="list-style-type: none"> <li>◦ From the toolbar, select <b>Bar</b> then <b>Bar Chart of Values</b>.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>● Drag and drop &lt;attribute&gt; to the vertical/horizontal axis. <ul style="list-style-type: none"> <li>○ Drag and drop <b>Location</b> to the <b>horizontal axis</b>.</li> <li>○ Drag and drop <b>Count</b> to the <b>vertical axis</b>.</li> </ul> </li> <li>● Click once on &lt;attribute&gt; to color bars by &lt;attribute&gt;. <ul style="list-style-type: none"> <li>○ Click once on <b>Item Description</b> to color the bars by item.</li> </ul> </li> </ul>
<p>How to...</p> <p>describe GENERAL actions</p>	<ul style="list-style-type: none"> <li>● Add / Remove</li> <li>● Open / Close</li> <li>● Show / Hide</li> <li>● Click / Select</li> </ul>
<p>How to...</p> <p>direct students to define VOCABULARY</p>	<ul style="list-style-type: none"> <li>● Click / Select <b>Vocabulary</b> at the bottom of the display to see definitions of terms used in the dataset.</li> </ul>
<p>How to...</p> <p>direct students to read ABOUT the dataset</p>	<ul style="list-style-type: none"> <li>● Click / Select <b>About</b> at the bottom of the display to review information about the dataset.</li> </ul>
<p>How to...</p> <p>reference the LEGEND Area</p>	<ul style="list-style-type: none"> <li>● Click on &lt;value&gt; in the Legend Area to highlight it in the graph.</li> </ul>
<p>How to...</p> <p>Reference TOOLBAR Buttons</p>	<p>Swapping horizontal and vertical axes.</p> <ul style="list-style-type: none"> <li>● Click on the  icon to swap the horizontal and vertical axes.</li> </ul> <p>Choosing a type of graph</p> <ul style="list-style-type: none"> <li>● From the toolbar, select <b>Line Graph</b>.</li> <li>● From the toolbar, select <b>Box</b>.</li> </ul>

<p>How to...</p> <p>color by ATTRIBUTE and have them appear in the LEGEND</p>	<p>Categorical</p> <ul style="list-style-type: none"> <li>● Click on the color scale of &lt;Attribute&gt; to color the data points by the categories.</li> <li>● The data points will be colored by the categories of &lt;Attribute&gt;.</li> <li>● To color the data points by the different &lt;Attribute&gt; categories, click on the color scale of &lt;Attribute&gt;.</li> <li>● To show &lt;Attribute&gt; in the legend, click once on the attribute in the case card</li> </ul> <p>Numerical</p> <ul style="list-style-type: none"> <li>● Click on / Select the color scale of &lt;Attribute&gt; to color the data points by the range of values.</li> </ul>
<p>How to...</p> <p>explain how to FILTER an attribute</p>	<ul style="list-style-type: none"> <li>● Click on / Select the  icon for &lt;attribute&gt;.</li> </ul> <p>Categorical</p> <ul style="list-style-type: none"> <li>● At the top of the <b>Filter Categories</b> list, uncheck the top box to clear all of the checks.</li> <li>● Recheck the box(es) for &lt;value(s)&gt;.</li> <li>● Close the <b>Attribute Settings Card</b> by clicking the <b>X</b> in the upper right corner.</li> </ul> <p>Numerical</p> <ul style="list-style-type: none"> <li>● Under <b>Filter Range</b>, type in the minimum and maximum values for the desired range.</li> <li>● Select the  icon next to &lt;attribute&gt; and filter the “Max” range to &lt;#&gt;.</li> </ul>
<p>How to...</p> <p>direct users to open/close the PLOT SETTINGS CARD</p>	<ul style="list-style-type: none"> <li>● From the toolbar, choose More and then  to open the <b>Plot Settings Card</b>.</li> <li>● In the <b>Order Cards By</b> dropdown, select &lt;attribute&gt;.</li> <li>● In the <b>Color Cases By</b> dropdown, select &lt;attribute&gt;.</li> <li>● Under <b>Font Size</b>, use the +/- to change the font size.</li> <li>● Under <b>Case Size</b>, use the +/- to change the case size.</li> <li>● Close the <b>Plot Settings Card</b>.</li> </ul>