

## Creating Successful Tuva Activities

**Introduction:** Hi! Thanks for joining Tuva Labs! We have a lot of fantastic tools but they can be daunting in the beginning. I'm going to walk you through thinking about data and making a lesson plan Tuva Labs. Lucky for you, it's not that different from what you already do.

### Tuva Terms:

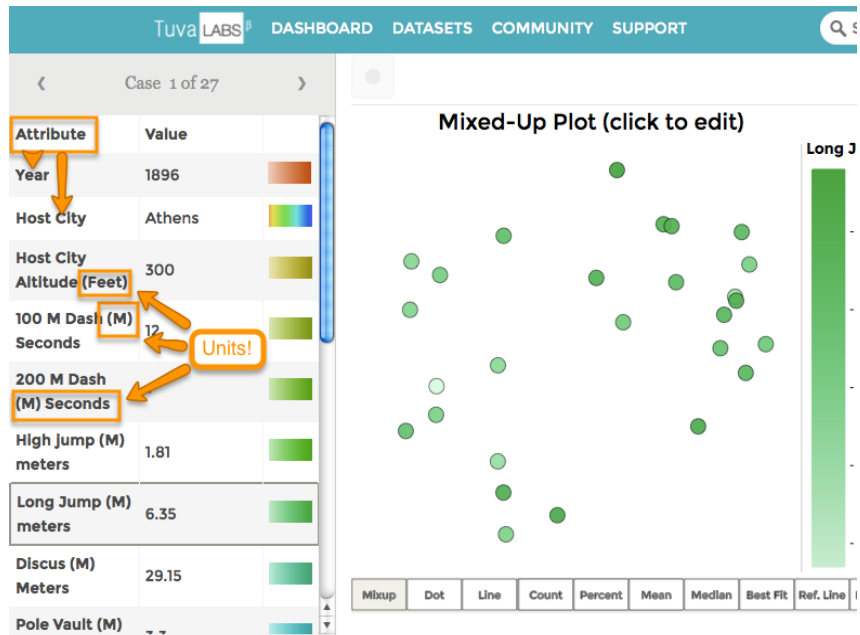
**Topic:** the subject of the dataset. They are content based. The math standard you want to teach with the dataset is up to you. Some topics are History of the Olympics, Climate Change or World Wildlife Populations



**Attributes:** Attributes are the categories or facets of the data sets. They are listed on each data card. In the dataset “History of the Olympics” some of the attributes are the year it took place, the host city and the fastest times for a particular event. A student can drag and drop attributes onto the X or Y axis to graph the information.

**Units:** Units are how we measure things. Units can be meters, ounces, seconds, miles per hour, coffees per day, etc.

**Case:** Each case card represents one full set of information or “a case” that is included in the graph



## Planning Stages

**The Stages:** Creating lessons on Tuva has four main stages

1. Explore - explore the data, its attributes and units. Click through things! Play!
2. Level - decide what age, grade level, topic and prior knowledge would be needed to successfully complete your lesson
3. Outcomes - choose your learning outcome, Aims or Essential questions
4. Create the activity!

**Explore:** You need to explore the dataset! You must click through the cards and make some graphs. Keep in mind what you want your students to explore when they look at the data.

### Look for the Following and

What are the attributes of the dataset?

How many cases are there?

Are there any extreme values?

What units are used in the dataset?

Which graphing tools best summarize the attributes?

What is the shape of the distribution?

How are values dispersed around the mean?

Are there any significant deviations from the normal trends?

Do I think this dataset can meet the educational goals I have for my students?

### Level: Who is this lesson for?

When creating a lesson take into account your students' prior knowledge. Depending on their age and grade level you may have to do a lot of frontloading or limit the amount of attributes they explore when doing the activity.

### Consider the following:

Are students familiar with the content topic?

Are they familiar with the attributes and units in the dataset?

Are students familiar with the kind of statistical analysis you want them to do?

### Outcomes: What are students supposed to learn?

Once you have explored the dataset and figured out what background knowledge your students need, you can plan the actual lesson. As usual you must define the learning outcomes. You may call this your Aim, Essential Question or whatever else you want.

### Decide the following

Do I have a topic based goal or a statistical skill based goal?

Am I planning and inquiry based lesson or a teacher led lesson?

What is the Aim? (Write it down!)

## Create the Lesson!

You know how lessons work. Make sure you don't forget all your tools!

### Lesson Steps

1. **Activate Engagement** - get the kids excited about the activity
2. **Build Context** (depending on the topic you may do this at the start of class, as or over the course of a week, unit, semester or year). Make sure to frontload whatever background information, vocabulary or statistical understanding the students might need to grasp the dataset.
3. **Facilitate Visualization and Analysis**
  - 3.1. Write 1-2 questions that allow students to explore the data. You can even have a question that just let them click on different buttons to see what happens. Let them figure out how the site works.

#### EXAMPLES

1. Nations compete with each other to bag the chance to host the Olympics each time. Let's begin by exploring the different countries which have hosted the summer Olympics between 1896 and 2012. Drag the Host City attribute to the horizontal axis of the plotting area.
2. Which country has hosted the Olympics games the maximum number of times?
3. Which nations has hosted the games twice?

**NOTE:** You can even build in some answers and positive reinforcement to come up when your click to the next question or prompt. This one says "Well done! **Great Britain** has hosted the Games thrice while **Greece, France**, and the **US** have hosted them twice."

- 3.2. Write 1-2 questions that will allow student to find highlights in the data

#### EXAMPLES

1. Let's investigate the gold medal times for women in the 100m dash now.
  - Click on the **Mix** button to get a fresh display.
  - Drag the **Year** attribute to the horizontal axis.
  - Drag the **100 M Dash (W)** attribute to the vertical axis.
2. In which year did women first take part in the 100m dash? For which years is the data missing? What world event took place during those years that might explain the gap?

- 3.3. Transition into questions that direct students to find statistical trends, extremes, correlations and distributions. Make sure your questions guide the students to find what you need them to find. Include that students are required to back up their answers with evidence in the wording of the prompt.

**EXAMPLES**

1. Of all the gold-medal times in the women’s 100m dash event, which one stands out to you as the greatest accomplishment for its time? Explain your choice.
2. In general, have the gold medal times for the women’s 100m dash been improving or deteriorating over the years? Include your evidence. Why might this be so?

**Inquiry Chart:** Here is a quick chart to help you scaffold Inquiry Based Lessons

<b>Level</b>	<b>Question for Investigation</b>	<b>Data Analysis Process</b>	<b>Conclusion</b>
<b>Level 1</b>	Given	Structured	Structured via provided questions
<b>Level 2</b>	Given	Structured	Open
<b>Level 3</b>	Given	Open	Open
<b>Level 4</b>	Open	Open	Open