# Lesson 10: Creating A Data Story

## Overview

This lesson assumes the students have successfully completed the lessons on cleaning data, summary tables, data visualization, obtaining data, and Google Forms. Those lessons had the students work with the movie ratings data set provided in the tutorials. In this lesson, students will work with their own data sets in their two-person team that the teacher assigned them to in the beginning of the course.

Each team makes a data story that includes a Big Question, how they found data related to their Big Question, how they processed the data, and answers to the Big Question that use visualizations and summary tables. Allow class time for each team to present their data story. This lesson assumes that the students know how to use PowerPoint or Google Slides, or similar presentation software.

## Purpose

The purpose of this lesson is to formulate and answer at least one Big Question using their data sets. Students will use both their primary data set, external data set, and responses from their Google Forms survey to answer their Big Question. Students will use previously learned skills on obtained data to process, create visualizations, and create summary tables. Students will be expected to present their data stories to their teacher and peers. At the end of this lesson, students will tell a data story and use data as evidence to support their arguments. Ideally, students will apply these skills in their other courses throughout their academic careers.

## Objectives

**Students will be able to:**

- Formulate one or more Big Questions about a topic for which data is available.
- Process data that you obtained (clean, filter, sort, etc).
- Create original visualizations from data that you obtained.
- Create summary tables from data that you obtained using basic statistics (e.g. average, counts).
- Tell a data story that includes answers to the Big Question.
- Publish your data to share with others.

## Vocabulary

- Vocabulary Guide
- Vocabulary Cards
- Vocabulary Slideshow With Audio
- Vocabulary Slideshow
- Vocabulary Word Search
- Vocabulary Crossword
- Vocabulary Word Wall
- Vocabulary Quizizz

## Links

**For the Students:**

- One copy of the Data Story - Project Guide

# Agenda

**Warm Up (15 min)**
- **Let's Watch! The Age Of Insight: Telling Stories With Data**
- **Let's Watch! Visualize This: How To Tell A Story With Data**

**Project (405 min)**
- **Let's Play! Data Story Project**
- **Let's Share! Data Story Presentations**

**Wrap Up (15 min)**
- **Let's Talk! Why Do We Care?**

**For the Teacher:**

- Use Data Sets Collection: Topic, CSV, ReadMe, Big Questions, Errors Key, Data Story to see sample data stories for every data set
- Creating A Data Story Quiz
- Creating A Data Story - Project Guide Rubric
- Answer Key: Creating A Data Story (COLLEGE RANKING) - Project Guide
- To view ALL sample data stories for each data set, use Data Sets Collection: Topic, CSV, ReadMe, Big Questions, Errors Key, Data Story

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**English Learner Lesson Adaptation Footnotes:**
**[1] English Learners:** This video contains some accents that may be difficult for English Learner students to understand. Ensure to highlight key concepts with them.
**[2] English Learners:** Excellent video for English Learner students to follow and watch.
**[3] English Learners:** English Learner version of activity guide—Creating A Data Story - Project Guide—available.

# Teaching Guide

## Warm Up (15 min)

### Let's Watch! The Age Of Insight: Telling Stories With Data

#### *Remarks*

In the last class, we obtained original data by creating a Google Forms survey based on our Big Question. We distributed our surveys to our peers and collected responses to help answer our Big Question. Now, we have our primary data set, external data set, and responses from our Google Forms survey to use as evidence when we answer our Big Question. With all this data we collected, we can finally tell our data stories!

In this lesson, we will be using all our previously learned skills in data to tell our data stories and present it to our classmates. But why should we even bother telling stories about data? I would like to begin our class with a video that gives insight into using data storytelling for data journalism. As we watch this video, I would like you to keep the following questions in mind:

***Let's Think!*** How do data journalists use storytelling? Why is data storytelling important?

[1] **Watch:** As a class, watch The Age Of Insight: Telling Stories With Data [4:16].

#### *Remarks*

We understand now that data journalists view data as one of the many tools they use when reporting on stories. Data journalists will go out and find data sources, interpret these data sources, and use these data stories to discover human stories that you would not have found ordinarily. Data storytelling in data journalism allows people to be shown millions of rows of data in a way that is relevant to themselves and to their communities instead of feeling miniscule and overwhelmed by the large data sets. As stated in the video, you can do a much better and more accurate job at describing reality using data. This, in turn, results in giving people important information that allows society to function better and people to lead better lives. Data journalism allows for more interesting stories to be told and better inform readers through interactive visualizations and stories.

The biggest takeaway from this video that I want you all to understand is to make your data stories interesting and relevant to your audience. I do not want you to overwhelm us with all the rows in your data set. Rather, I want you to use these data sets to create visualizations that show trends and patterns relating to your Big Question that most of us would not have ordinarily seen.

### Let's Watch! Visualize This: How To Tell A Story With Data

#### *Remarks*

The next video that we will watch describes the steps in telling a story with data. It is a quick video that will lead us into a discussion over the expectations for your data stories. As we watch this video, I would like you to keep the following questions in mind:

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*Let's Think!* What are some of the steps in telling a story with data ? What are some steps that you have already done?

[2] **Watch:** As a class, watch Visualize This: How To Tell A Story With Data [1:22].

### *Remarks*

After watching this video, we realize that we have already done a lot of these steps already! We have collected all our data, which includes our primary data set, external data set, and responses from our Google Forms survey. We have our Big Question that we came up with for our data in the last activity for our survey. We know that we will be using Google Sheets as our tool when examining and analyzing our data. We have explored our primary data set by processing it (i.e., cleaning, filtering, sorting) and creating visualizations and summary tables to show significant trends and patterns that can help answer our Big Question. Now, all we have to do is construct our data story and answer our Big Question using our data as evidence.

# Project (405 min)

## Let's Play! Data Story

### *Remarks*

We can begin working on our data story project. In this project, you and your partner will use Google Slides to create a presentation based on your Big Question. You will tell a data story using your primary data set, external data set, and responses from your Google Forms survey. There are more specific guidelines in the project guide that I will be distributing to all of you. You will have several class periods to work on your presentation slides for your data story. Please call me over at any point that you are working on your presentation if you have any questions. At the end of this activity, you will submit your presentation slides to me. Let's get started!

**Distribute:** One copy of the following to each student:

- [3] Data Story - Project Guide [180 min]

As a class, review the overview of the activities as well as the expectations and necessary submissions for the activities as discussed in the ***Remarks*** above.

**Support:** Allow students several class periods to work on the project. As you circulate the classroom, assist any students that may have questions or issues that need to be resolved as they work through the project.

## Let's Share! Data Story Presentations

### *Remarks*

Now that everyone has finished their presentation slides, we can now begin presenting our data stories. I will randomly be choosing your groups to present. I want to quickly go over how I will be grading your presentations. I will be looking at the content in your presentation that discusses your Big Question, your primary data set displayed in CSV file and Google Sheets, your cleaning

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of the primary data set, your summary table of your primary data set, your survey and your cleaning of your survey, visualizations from your primary and survey data sets, your visualization of Google Trends analysis on your topic, your external data set displayed in CSV file and Google Sheets, your results from doing a Google Search of your Big Question, and an answer to your Big Question using summary tables and visualizations as evidence. Additionally, your final slide should have information on where people can obtain your data sets. That covers everything that I will be looking for in your presentations. If anything is unclear, please let know and I will clarify. Otherwise, we will get started with our presentations!

**Presentations:** Allow students several class periods to present their data stories. [225 min]

Ask stimulating questions about students' data stories to encourage discussion on their findings. The following can be used as potential discussion questions on students' data stories:

- Did the answer to your Big Question surprise you? Why? Why not?
- What are some interesting trends that you discovered about your topic? Did you expect these trends?
- Were you surprised by the results of a Google Search on your Big Question? Do you think the article you chose did a good job answering your Big Question? If not, what could the author of the article have done differently to answer your Big Question more accurately?
- Do you think a simulation in NetLogo could represent your data sets? How could you use NetLogo simulations to help answer your Big Questions?
- How might you use the skills you have learned in this course in other classes like science, math, or even English?

**Transition:** After all students have presented their data stories, bring students attention back to you to have a final discussion about data.

# Wrap Up (15 min)

## Let's Talk! Why Do We Care?

### *Remarks*

I hope you all had fun presenting and listening to everyone's data stories. I would like to have a final discussion on data.

**Discussion Questions:** The following can be used as potential discussion questions during your wrap-up with students:

- Why is data important? What can we do with data?
- Why is data storytelling important? Who uses data storytelling? How can you use data storytelling in your other classes? How can you use data storytelling in your careers?
- Why is it important to make visualizations for data? What types of visualizations can you make?
- Why is cleaning data important? What are some of the different constraints to look for in your data?
- What are the steps in data storytelling? How do you come up with one or more Big Questions on your data? What is the best way to tell/show your audience about the trends you discovered?

**Discuss:** Allow students an opportunity to share their responses with the class.

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## *Remarks*

Great responses! You have all learned essential skills in both simulation and data. I hope that you take all the concepts and skills you learned in this course and apply to your other classes. Now, you can accurately share a data story and support your findings with data as evidence. We have now wrapped up our two major units of the course focusing on graphic and web design, simulations and data. Make sure you have submitted your presentation slides to me before you leave class.

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