

MS Data Science - Unit Overview



Unit Goal: Students understand what Data Science is, how the Data Science process works (identifying a Data Question, cleaning the data, visualizing the data, and communicating about the data), and how data can be used to answer questions and solve problems.

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	Lesson 9	Lesson 10
	What is Data Science?	Making Sense of Data	Visualizing Data, Part I: One-Variable Data	Understanding Survey Data	Cleaning Data	Visualizing Data, Part II: Two or More Variables	Telling the Story of Data	Gathering Representative Samples	Putting it to Work, Part I: Answering Your Data Question	Putting it to Work, Part II: Communicating Your Data
Lesson Objective	I can explain what data science is and why it's important, including who does data science, where data comes from, and how data is used.	I can interpret information presented in a spreadsheet, such as cases, attributes, and responses.	I can use CODAP to create a visualization of data and use it to describe the data, (i.e. shape, distribution, measures of center).	I can describe how different types of questions (i.e. closed vs. open questions) lead to different types of data (i.e. numerical, categorical, open text) and discuss the tradeoffs of each.	I can clean and organize survey results and describe the tradeoffs involved when cleaning a data set.	I can use CODAP to create a visualization of two or more variables from a data set and use it to describe the data, (i.e. shape, distribution, measures of center).	I can choose between different visualizations of a data set and select the one that best answers a given data question.	I can explain how well a given data set can answer a question, considering factors such as size, source, question type, and sampling.	I can identify a Data Question and create a visualization of at least two variables from a data set to answer my question.	I can use my data visualization to describe the data (i.e. shape, distribution, measures of center), answer my Data Question, and reflect on the choices I made as a data scientist.
Question(s) of the Day	What is data science? Why is data science important?	What do the different values (numbers and words) in a spreadsheet represent?	How do data visualizations help us understand and describe data?	How does the question you ask affect the data you get?	What are some ways data scientists make messy data usable?	How do data visualizations help us understand and describe data with two or more variables?	How do I choose the best visualization to answer a question?	What are the key things to consider when gathering data to make sure the data will be useful in solving a problem?	How can I take what I learned about data science and use it to answer my own data question?	How can I use my data visualization to answer my Data Question and communicate the data to others?
Formative Assessment of Lesson Goals	Journal responses to Question of the Day	Ask a sampling of students the questions from the Activity Guide during Activity 3 & review journal responses	Data Visualizations from CODAP Final Written Response to Stronger, Clearer Each Time	Journal responses to Question of the Day	Journal responses to Question of the Day	Final Written Response to Stronger, Clearer Each Time	Ask a sampling of students the questions from the Activity Guide & review journal responses	Journal responses to Question of the Day	Data Question & Data Visualizations from CODAP	Final Written Response to Stronger, Clearer Each Time
Assessment of Unit Goals (RUBRIC)	Formative Assessment #1 of Unit Goals		Formative Assessment #2 of Unit Goals			Formative Assessment #3 of Unit Goals		Summative Assessment of Unit Goals		
Language Routines	Collect & Display	Collect & Display		Collect & Display		Compare & Connect				
	Compare & Connect					Data Talk				Data Talk
	Discussion Supports	Discussion Supports	Discussion Supports	Discussion Supports	Discussion Supports	Discussion Supports	Discussion Supports	Discussion Supports	Discussion Supports	Discussion Supports
	Tea Party		Stronger, Clearer Each Time			Stronger, Clearer Each Time				Stronger, Clearer Each Time
	Think Pair Share	Think Pair Share		Think Pair Share			Think Pair Share	Think Pair Share	Think Pair Share	
	Three Reads of Data	Three Reads of Data		Three Reads of Data		Three Reads of Data		Three Reads of Data	Three Reads of Data	
			Whole Class Discussion	Whole Class Discussion		Whole Class Discussion	Whole Class Discussion	Whole Class Discussion		Whole Class Discussion
Link to Data Sets	N/A	Pizza Slice Data Set	Pizza Slice Data Set	School Party Survey data set	Pizza Choice Data Set	Cake & Frosting Data Set	N/A	Shirt Size Data Set	PISA Data Set	PISA Data Set
CODAP Skills Introduced	N/A	Opening CODAP	Creating a graph Saving to Google Drive	Creating multiple one-variable graphs	Cleaning data	Graphing multiple variables Moving attributes Deleting Attributes	N/A	Using a sampler	Deleting unnecessary attributes	Adding text box
Vocabulary Introduced	Data Data Scientist	Spreadsheet Data Data Question Column Cells Attributes Row Values Cases Sample Size	Data Visualization	Open response Closed Response	Raw data Clean data	x-axis y-axis legend		sample size random bias sampling representative		
Anchor Charts	Word Wall Where Data Comes From/ How Data is Used	Spreadsheet Anchor Chart	Answering a Data Question - Word Bank Teacher Exemplar - Answering a Data Question (Pizza)	Good Survey Questions		Answering a Data Question - Word Bank Teacher Exemplar - Answering a Data Question (Cake)	Choosing a Visualization Anchor Chart	Gathering Useful Data Anchor Chart	Answering a Data Question - Word Bank	