Programming Section #4: [Plotting] Teacher Page

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## Storyline

Starting with a discussion about the importance of HOW data is portrayed, this lesson will cover the basics of portraying data in MATLAB while keeping in mind the responsibilities of visualization and importance of being deliberate in data processing and presentation.

## Main Learning Goal

Develop familiarity with plotting and visualization techniques in the MATLAB environment. Apply knowledge of different visualization techniques to present data in an efficient and appropriate manner.

Cover how to create, resize, label, and adjust plots to desired specifications.

## Focus Question

## What is the best way for me to visually communicate my data in MATLAB?

## Elicit

How will I engage students and elicit their ideas?

| Activity Name and Description | Teacher Moves | Student Moves | Resources |
| --- | --- | --- | --- |
| * **Map Exploration** * *10min* * Discuss the philosophy behind mapmaking and how it affects our interpretations | * Walk the students through the content, probably lecture-style * Lead a discussion on how different maps can imply different things. | * Find different examples of unique maps online and share with the class / discuss | * [Chart Junk](https://www.codeconquest.com/blog/chart-junk-how-to-avoid-it/) (unnecessary aspects/properties of a figure) * [Different Interactable Maps](https://www.mapchart.net/) (could have students explore detailed and less detailed map options) * [Info on Interpreting Maps](https://education.nationalgeographic.org/resource/interpreting-maps/) * [How to choose the right chart](https://infogram.com/blog/choose-the-right-chart/) |

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## Develop

How will I get students to explore, explain, and develop ideas?

| Activity Name and Description | Teacher Moves | Student Moves | Resources |
| --- | --- | --- | --- |
| * **Lil Pump activity** * *35min* * Walk through example of data processing | * Walk the students step by step through the live script showing how simple data can be processed and turned into visualizations. | * Following along with the teacher and the live script, ensuring they understand how it works | * [How to choose the right chart](https://infogram.com/blog/choose-the-right-chart/) * [MATLAB plotting documentation](https://www.mathworks.com/help/matlab/ref/plot.html#responsive_offcanvas) * [MATLAB data import documentation](https://www.mathworks.com/help/matlab/data-import-and-analysis.html) |

## Deploy

How will I get students to use and apply their ideas to what they’ve learned?

| Activity Name and Description | Teacher Moves | Student Moves | Resources |
| --- | --- | --- | --- |
| * **Lil Pump extension** * *35min* * Students try processing their own data | * Supervise students and assist them with applying ideas from the example code into processing data from a new column in the excel data sheet | * Adapting the coding techniques covered in the develop section to a new set of data from the same data file | * [How to choose the right chart](https://infogram.com/blog/choose-the-right-chart/) * [MATLAB plotting documentation](https://www.mathworks.com/help/matlab/ref/plot.html#responsive_offcanvas) * [MATLAB data import documentation](https://www.mathworks.com/help/matlab/data-import-and-analysis.html) |

## Refine

How will I get students to extend, elaborate, and change their ideas based on what we now understand?

| Activity Name and Description | Teacher Moves | Student Moves | Resources |
| --- | --- | --- | --- |
| * **Discussion** * *5min* * Answer a few questions about what their visualizations communicate | * Prompt the students to have a discussion about the questions in the assignment | * Write down some ideas to the questions and then share in a group discussion | * [How to choose the right chart](https://infogram.com/blog/choose-the-right-chart/) * [How to read different types of charts](https://datatab.net/tutorial/charts) |