Lesson Plan: Data Analysis in Maine-based Businesses
(for Unit 5: Computing and Data Analysis)

OVERVIEW

Purpose of this lesson

These video lessons are meant to show students that:
   a.   computational thinking is part of everyday jobs in their local area, and
   b.   not all "computer science" related jobs involve programming.

They are also meant to support one or more of the Computational Practices listed in the ECS curriculum (from p. 12 in ver. 7). Which computational practices best align will depend on the approach each teacher takes with the lesson, so once you determine your approach, you can emphasize the relevant practices with students.

> **ECS Computational Practices**
> *   **Analyze the effects of developments in computing (impact/connections)**
> *   **Design and implement creative solutions and artifacts**
> *   **Apply abstractions and models**
> *   **Analyze their computational work and the work of others**
> *   **Communicate computational thought processes, procedures, and results to others**
> *   **Collaborate with peers on computing activities**

This particular lesson illustrates how data is collected, analyzed and used to make decisions for the Maine Department of Inland Fisheries and Wildlife.

We suggest you use this video as an introduction to Unit 5, or early in it, to emphasize (a) one or more of the computational practices listed above and which are being encompassed in jobs all around the state, and (b) that data analysis and representation are part of computer science.

ECS connections

This short lesson supports the following objective introduced in ECS Unit 5: Computing and Data Analysis (ver. 7, p. 25):

*   Justify conclusions drawn from data analysis

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ACTIVITY INSTRUCTIONS

Engage

Have students do one or more of the following.

1. In small groups and/or as a whole class, have students discuss the following:

    a. What is "data"?
    b. To what businesses or organizations in your area do you think data is important? Give an example.
    c. In what ways can data be used for something useful? How can it be misused?

2. As a class, create a list of businesses or organizations to which data is important, along with the type/purpose of the data.

Explore/Explain

Have students do one or more of the following.

1. Show students the video interview with the folks from the Maine Department of Inland Fisheries and Wildlife (https://youtu.be/_wXnAMjvFIE). Help them connect this to the *Engage* activity they did. For example:

    a. What types of data does IFW collect?
    b. Who collects this data? Who analyzes it?
    c. For what purposes do they use this data?
    d. In what way is their data important to others?

    Have the class add to/edit the list created in Engage step 2.

2. Have students conduct local interviews with people for whom data is important in their own work or the work of their organization. Have students report back to the class about the experience (e.g.- class discussion, create a slideshow, write a story or new report, etc.)

Sample Interview Questions:
1. **Tell us a little about how your organization uses data.**
2. **How is the data collected?**
3. **Who analyzes the data?**
4. **How is the data analyzed?**
5. **Is data collection targeted for a specific purpose, or do you collect a variety of data and then look for what it can reveal?**
6. **What's one of the most important things that has come from this data?**
7. **Is there anything surprising you've learned from this data?**

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3. Have students create their own video-based interview of a local use of data. *(See sample interview questions under option 2.)*

Explain/Elaborate

Have students do one or more of the following.

1. If during the prior stage students conducted interviews (video-based or otherwise) they could now vote on which was the most interesting and plan a field trip to the location. Have them plan in advance what questions they would ask during the visit.
2. If students watched the data video during the Explore/Explain stage, they could elaborate on that experience now by creating their own video-based interview of a local or greater Maine use of data.
3. Conduct a general discussion about data to help students identify how their thinking has changed. Discussion questions might include:

    a. For what other types of businesses or organizations is data important?
    b. Is data important for all businesses?
    c. What surprised you?

Evaluate

We have not included any evaluation since teachers have many directions they can take with this lesson, but suggest that an evaluation or assessment for formative purposes will be useful.

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