



BRIDGING SCIENCE AND JOURNALISM CURRICULUM PACKET

This curriculum packet includes lesson plans for high school science teachers to help their students make the connection between science and journalism. This packet is plug and play - meaning that one can decide to use all lesson plans or just a few. The choice is up to you!

Each lesson plan includes:

- Overview of the activity
- NGSS standards the lesson matches to
- Student learning objectives
- Instructions for the activity (and relevant answer keys if needed)
- Lesson outcomes
- Assessment options

This curriculum aims to help students build their creative and critical thinking, problem solving, communication and writing skills while exploring aspects of science phenomena in San Diego while using journalistic and scientific approaches to complete each lesson.

The lesson plans included are:

- Geoscience
- Storytelling with Science
- How to Think Like a Journalist
- Engineering a Sensor
- Mapping with Science Data

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This project is part of the Center for Science and Media at San Diego State University in the School of Journalism and Media Studies. The Center for Science and Media is a collaboration of the School of Journalism and Media Studies with the College of Sciences in the areas of research, public service, and curriculum. The Center's mission is to educate the public about science, through the strategic and ethical use of media.

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ENGINEERING A SENSOR

Lesson Plan Created by
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ABOUT

This lesson focuses on how to create and/or use an existing sensor for capturing science phenomena. You can adapt the science phenomena to your needs in the class.

NGSS STANDARDS

Practices: Asking Questions and Defining Problems, Developing and Using Models, Analyzing and Interpreting Data, Engaging in Argument from Evidence, Obtaining and Evaluating and Communicating Information

Disciplinary Core Ideas: ESS3C-Human Impacts on Earth Systems, ESS2A-Earth Materials and Systems, PS4C-Information Technologies and Instrumentation,

Cross Cutting Concepts: Patterns, Cause and Effect, Scale Proportion and Quantity, System and System Models, Energy and Matter, Structure and Function, Stability and Change, Interdependence of Science, Engineering, and Technology, Influence of Science, Engineering, and Technology on Society and the Natural World

LEARNING OBJECTIVES

Students will be able to:

- Learn how to use sensors to capture data
- Discuss the benefits and challenges of using sensors to capture data

ACTIVITY WITH EXISTING SENSORS IN MOBILE PHONE

For this exercise, you can use a sensor accessible in the Google Science Journal app: <https://sciencejournal.withgoogle.com/> (sensors include: accelerometer, brightness, compass, magnetometer, pitch, sound intensity).

Instructions

1. Student will locate the sensor in their smartphone.
2. Have students open sensor and observe how it works - what is it capturing? When you move your smartphone what happens with the data? What kind of graphing of the data does it show you?
3. Note your observations in Google Science Journal with the following mini experiments:
 - a. What happened when (you can have them move around the classroom)
 - b. What happened when (you can have them leave the classroom and go around the school campus or outside for a few minutes)
 - c. What happened when (your choice of changing the environment around them)
4. Compile your observations into a short paragraph to share with the teacher and address the following:
 - a. How did the sensor work in the different scenarios?
 - b. What kind of data did it collect and how did the graphing of the data work?
 - c. How does mobile technology impact how data can be collected from sensors in your phone? What are its benefits? Its disadvantages?
5. Provide a short paragraph on a piece of paper OR provide your google science journal entries with your teacher via the share option in the app.

EXTRA: Student can take a screenshot from their phone of the sensor data being collected from their phone and send that photo to the teacher.

ACTIVITY WITH CUSTOM BUILT SENSOR

Students can also try out this same sensor activity with a custom sensor (i.e. PocketLab Air Sensor)

Instructions

1. Have students look at sensor and observe how it works - what is it capturing? What are the components and how are they connected together? What kind of output does it give?
2. Note your observations in Google Science Journal with the following mini experiments:
 - a. What happened when (you can have them move around the classroom)
 - b. What happened when (you can have them leave the classroom and go around the school campus or outside for a few minutes)
 - c. What happened when (your choice of changing the environment around them)

3. Compile your observations into a short paragraph to share with the teacher and address the following:
 - a. How did the sensor work in the different scenarios?
 - b. What kind of data did it collect and how did the graphing of the data work?
 - c. How does mobile technology impact how data can be collected from sensors in your phone? What are its benefits? Its disadvantages?

5. Provide the short paragraph on a piece of paper OR provide your google science journal entries with your teacher via share option in the app.

EXTRA: Student can take a screenshot from their phone of the sensor data being collected from the sensor and send that photo to the teacher.

OUTCOME

The students will be able to:

- Provide observational information of watching what a sensor does and what it captures
- Write a summary about how sensors help to capture data all around us and can be used in a variety of science experiments

ASSESSMENT

Students will be assessed by:

- Writing a summary about the experience
- Observing the sensor capturing the data in real-time during the class period

EXTRA FROM GOOGLE SCIENCE JOURNAL SENSORS:

For other experiments with the sensors in their smartphones from the Google Science Journal, here are some options:

Light/Brightness:

<https://sciencejournal.withgoogle.com/experiments/getting-started-with-light/>

Motion:

<https://sciencejournal.withgoogle.com/experiments/getting-started-with-motion/>

Sound:

<https://sciencejournal.withgoogle.com/experiments/getting-started-with-sound/>