Lesson 8 - Final Project Work Time

**Problem statement** Students could use the background information in this lesson to construct a solution to the problem.

Picture this: It’s a beautiful summer day and your family goes to the lake to swim. When you arrive there is a large sign that reads “Lake closed for swimming due to pollution.” While you are bummed out, you overhear a lifeguard stating that he hasn’t seen any salmon either. This gets you thinking about the connection between not being able to swim and the missing salmon.

The health of the environment is at a critical point. The government agency that oversees this, The Environmental Protection Agency (EPA), has lost a big portion of its budget. That means that they are unable to have enough employees to help make sure people are following the laws. Since people are not being held accountable, some people are breaking the laws and causing damage. One piece of the environment that is greatly impacted is the water. Bodies of water, like lakes and rivers, provide homes to many different types of plants and animals. When pollution enters these ecosystems the damage done is difficult to repair.

The Environmental Protection Agency is looking for new ideas to solve the water pollution problem. You will need to convince the EPA that your plan is the right one to solve this problem and save the fish!

**Lesson standards (NGSS, CCSS, CTE):**

**ETS1.B Designing solutions to engineering problems:** Testing a solution invoices investigating how well it performs under a range of likely conditions.

**4-ESS3-2 Constructing Explanations and Designing Solutions**: Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution.

**4-PS4-1** Develop a model using analogy, example or abstract representation to describe a scientific principle

**CCSS.ELA-Literacy.RI.4.7** Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. **CCSS.ELA-Literacy.RI.4.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

**CCSS.ELA-Literacy.RI.4.9** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

**CCSS.ELA-Literacy.W.4.7** Conduct short research projects that build knowledge through investigation of different aspects of a topic.

**CCSS.ELA-Literacy.W.4.8** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

**CCSS.ELA-Literacy.W.4.9** Draw evidence from literary or informational texts to support analysis, reflection, and research.

If relevant to lesson, include:

Soft skills: creativity and innovation, apply technology effectively, productivity and accountability, leadership and accountability

Locally and/or personally relevant for students: Research and problem solving skills can be focused on an outcome that matches the interest of the student such as coding, constructing, or writing.

Connections to career and educational pathways: Not relevant

**Materials:**

\*Anything you may need for the types of projects you are allowing your students to do

\*Project rubrics

**Lesson preparation:** Make sure all materials are available from previous lesson for students to access.

**Time required:** 60 min-180 min

**Grouping of students for instruction:** Keep same process as previous lesson unless any changes need to occur based on previous performance.

**What is the instruction?**

|  |  |  |
| --- | --- | --- |
| **Time** | **Teacher** | **Student** |
|  | Gather students in a way that works for your classroom. Introduce problem statement.  Review the KLEWS chart  Tell students that now that they have finished their research for their project, today they will be starting their final project.  Tell students their options for presenting their solution. They can be any of the following, or others that work for your classroom: powerpoint, skit, poster, brochure, coding on scratch, video, prezzi etc.  Review the rubric for the project with your students.  If needed prep your students in any way necessary for the project. (you may need to show them how to use powerpoint, give your specific requirements, etc)  Give students work time! This will likely take a few days.  Throughout this process students may need to research more, or discuss ideas with other groups. Do what works best for your classroom. | Listening to problem statement. |

**Accommodations:**

Resources can be printed if access to technology is limited.

Resources can be printed if specific students will do better with a paper copy.

Resources can be limited in number if needing to reduce the amount of possibilities.

Students can find their own resources to use as well.

**Extension**

\*Students can use more then one method to present their information

\*Students can present a final solution for multiple types of pollutions

**Assessment:**

Check to see that all groups have been taking notes and have a cohesive idea of what problem they are working on solving. Be sure groups are ready to present by the end of the session.

**References/Resources:**

Lesson 7 Research List from Teacher Resources