| **Lesson Plan Title:** Penguins Don’t Wear Sweaters- Oil Spill Clean Up |
|---|---|
| **Teacher Name:** Kelly Stout | **School:** Honey Creek Middle School |
| **Subject:** Science | **Grade Level:** 7th grade |

### Problem statement, Standards, Data and Technology

**Asking questions and defining problems**
Establish driving question for the lesson plan or define problem students will be solving.

Attach any documents used to establish the driving question or define the problem.

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How can students determine the best method for cleaning up an oil spill while having the least amount of impact on the environment?
| Incorporating Next Generation Science Standards, Common Core, or State Standards | LST.4: SYNTHESIS AND CONNECTION OF IDEAS (READING)  
Build understanding of science and technical texts by synthesizing and connecting ideas and evaluating specific claims  
6-8.LST.4.3: Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.  
Physical Science  
7.PS.8 : Investigate a process in which energy is transferred from one form to another and provide evidence that the total amount of energy does not change during the transfer when the system is closed (Law of Conservation of Energy) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State the standards that will be covered during this lesson plan. Include all standards which may apply (NGSS, Common Core, or State Standards).</td>
<td></td>
</tr>
</tbody>
</table>
| Obtaining and evaluating information  
How will students be obtaining and/or collecting the information? | Students will develop a method to absorb the oil that has been spilled into the water, considering knowledge of petroleum and the materials. Students will try three materials and determine the best method for oil removal. The material that removes the largest amount of oil will be considered the most effective. The group will consider how this material impacts the environment and cost efficiency. |
| Analyzing and interpreting data  
How will students be analyzing and interpreting the collected data? | Students will be collecting data by evaluating the amount of oil absorbed by the materials. Groups will share their data and the class data will compare the data of the materials used. |
<table>
<thead>
<tr>
<th>Use of technology and software</th>
<th>Students will view the PowerPoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate the type of technology and software students will be using in order to implement this lesson plan.</td>
<td></td>
</tr>
</tbody>
</table>

**Collaboration, critical thinking and communication**

<table>
<thead>
<tr>
<th>Collaboration</th>
<th>After viewing the powerpoint, the teacher will read aloud “Penguins Don’t Wear Sweaters” and students will work in small groups to complete the lab. Students will collect data and determine the best material for oil spill clean up.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate how students will be collaborating during the implementation of the lesson plan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Critical Thinking</th>
<th>Using previously learned knowledge and information from the powerpoint presentation, students will consider materials for the removal of the spilled oil. In determining the materials to be used, the students will consider the availability, cost and environmental impact of the material. Students will examine these results and analyze the relationship with the lab results and real world application of this method.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How will the students evaluate the question or defined problem to reach an objective conclusion? How will the students be using the learned content and collected data to be able to critically think about the established question and/or problem on this lesson plan?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Communication</th>
<th>Students will complete the lab report following the completion of lab and will determine the best method for removing spilled oil from the water. Each groups information will be shared with the class. If time allows, classroom data will be graphed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How will the students communicate their findings and conclusion regarding the established question and/or problem?</td>
<td></td>
</tr>
</tbody>
</table>

**References**
**Teacher’s References**
Include all references used to develop and implement this lesson plan.

- Penguins Don’t Wear Sweaters
  By: Marikka Tamura
- Power Point
- Student lab sheet

**Student’s References**
Include all references students will need to complete this lesson plan.

Students will consider information from the text and Powerpoint. Incorporating prior knowledge about oil/petroleum and oil spills.

**Assessment Plan**

**Assessment Plan**
How will the students be assessed during and/or at the end of the lesson plan?

Include resources that will be used to assess the students for the lesson plan.

Students will be informally assessed. Students will complete and submit a lab report. Future exams will include this information in the assessment as appropriate.
## Resources and Costs

### Resources Needed
List all the resources needed (equipment, facilities, materials or any other resources).

<table>
<thead>
<tr>
<th>Table/ work area</th>
<th>Water, vegetable oil, food coloring, gallon (milk ) jug, found materials (yarn, paper towels, cotton balls, feathers, Q tips, hair, soap, etc), small boat or floating object.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sink</td>
<td>Stop watch</td>
</tr>
<tr>
<td>Graduated Cylinder</td>
<td></td>
</tr>
</tbody>
</table>

### Costs
List the estimated cost of implementing this lesson plan.

Include all costs related to equipment, materials and any resource critical to the implementation of the lesson plan.

<table>
<thead>
<tr>
<th>Recycled milk jug</th>
<th>Pantry Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetable oil</td>
<td>Food coloring</td>
</tr>
<tr>
<td>Found materials</td>
<td></td>
</tr>
</tbody>
</table>

## Implementation Plan

### Implementation Plan Timeline
Establish the timeline to implement the lesson plan.

Provide an estimate of time and days in order to complete the lesson plan.

The lesson could be extended or shortened as necessary for the teacher.

The lesson is intended for two, 45 minute class periods.

### Day 1
- Introduce/ review Petroleum (What is it, why do we use it, where did it come from, How do we use it?)
- View Powerpoint Presentation (Refinery locations, needs of petroleum worldwide, transporting petroleum, and environmental impact)
- Read *Penguins Don’t Wear Sweaters*. Discuss connection between the trade book and the lab.
- Introduce the oil removal lab. Brainstorm items to use tomorrow for the lab.
| Day 2 | ● Reintroduce/ review the lab.  
       ● Students complete the lab and complete the lab report.  
       ● Class discussion and graph the lab data, as time allows. |
Clean up, Clean Up, Everybody Do Your Share

Students will be creating an oil spill, and determine the best method for cleaning up the water. Students will gather materials and follow the procedure while recording data. **Before starting the experiment read the procedure and make predictions.**

Procedure

1. Each group will fill a gallon jug (cut in half) with water.
2. Put 2 TBSP vegetable oil and 1 drop of red food in a Styrofoam cup. (The food coloring will not mix completely. It represents the toxic chemicals trapped in crude oil spills)
3. Place the floating boat in the water.
4. Prepare your 3 items used to absorb the oil.
5. Pour the oil solution into the water.
6. Use your first item to absorb the oil for 1-2 minutes.
7. Squeeze the contents into the graduated cylinder. Record your data.
8. Repeat steps 6 and 7 for the second and third item.
9. Review data and write your conclusion.

1. Which item do you believe will absorb the most oil? ________________________________

2. Item 1 __________________________
   Amount of oil/ water removed ________________________________

3. Item 2 __________________________
   Amount of oil/ water removed ________________________________

4. Item 3 __________________________
   Amount of oil/ water removed ________________________________

Data Analysis and conclusion _______________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________