

**Issue-Oriented Science:  
Engage, Motivate, Educate**

**Design resources**

**PDI  
NSTA 2008**

**Science Education for Understanding Program (SEPUP)  
Lawrence Hall of Science  
University of California Berkeley**

## Analyzing Issue-Oriented Science (IOS) Instructional Materials

**Directions:** Use this sheet to record evidence that demonstrates how each piece meets the IOS Criteria.

| <b>IOS Criterion</b>   | <b>Piece Being Evaluated</b> |  |
|--|------------------------------|--|
| <b>Requires an acquisition of important scientific concepts and processes</b>                        |                              |  |
| <b>Scientific concepts and processes are appropriate to grade level and subject matter</b>           |                              |  |
| <b>Requires an application of relevant scientific evidence</b>                                       |                              |  |
| <b>Engaging to diverse groups of students</b>  |                              |  |
| <b>Complex enough to foster discussion and debate (Is there more than one solution or response?)</b> |                              |  |

# Issue-Oriented Science Design Worksheet

**Summary of chosen issue:**

**Learning goal(s):**

**Nature of the piece (check those that apply)**

- Unit
- Multiple activities
- Single activity
- Other:

**What question will students wrestle with related to the issue?**

**What evidence will students use to support their decision?**

**What standards does this align with in each of the following categories?**

|  |  |
|--|--|
| <b>Content</b>                                     |  |
| <b>Process/Nature of Science/Inquiry</b>           |  |
| <b>Science in Personal and Social Perspectives</b> |  |

**Assessment Plan – What evidence will demonstrate students' progress toward the learning goals?**

|                   |  |
|-------------------|--|
| <b>Individual</b> |  |
| <b>Group</b>      |  |

## SAMPLE: Issue-Oriented Science Design Worksheet

### Summary of chosen issue:

*The salmon population on the Sacramento River in California has decreased in size. Scientists concerned that a new dam on the river is the cause of the decrease in the population, yet the dam is needed to supply additional energy to surrounding communities. There is debate about whether the dam should be removed or not because of the affect on the salmon population.*

### Learning goal(s):

- *Students will be able to describe biotic and abiotic factors that affect the salmon population.*
- *Students will be able to describe the impact of a dam on the biotic and abiotic factors in an ecosystem.*
- *Students will be able to identify and weigh the trade-offs of implementing a dam in a river ecosystem.*

### Nature of the piece (check those that apply)

- Unit  
 Multiple activities  
 Single activity  
 Other:

### What question will students wrestle with related to the issue?

*Should the dams be removed from the Sacramento river to help the salmon population?*

### What evidence will students use to support their decision?

*I don't have this from the article. I will need to find this elsewhere.*

### What standards does this align with in each of the following categories?

|  |   |
|--|---|
| <b>Content</b>                                     | <i>Living Environment (NSES 5-8)<br/>4a - A population is . . .<br/>4d - The number of organisms an ecosystem can support . . .</i> |
| <b>Process/Nature of Science/Inquiry</b>           | <i>1 - Think critically and logically to make the relationship between evidence and explanations</i>                                |
| <b>Science in Personal and Social Perspectives</b> | <i>2 - Causes in environmental degradation . .</i>  |

### Assessment Plan – What evidence will demonstrate students' progress toward the learning goals?

|                   |  |
|-------------------|--|
| <b>Individual</b> | <i>Students will write a letter describing their recommendation and include a discussion of the trade-offs. Their decision should include supporting evidence.</i> |
| <b>Group</b>      | <i>Groups will prepare a presentation of their recommendation and be prepared to have a debate to defend their recommendation.</i>                                 |