

# SEPUP: Issue-Oriented Science

**SGI Field Test Conference**

**Berkeley, CA**

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# SEPUP: Issue-Oriented Science

- **In SGI, the theme of sustainability and global issues related to this theme unify the program.**
- **Ecology: Living on Earth**
  - fisheries and fishery management
- **Cell Biology: World Health**
  - global infectious diseases

# Why use issue-oriented science?

- **Science for all students.**
- **Integrates sciences and integrates science with other subjects.**
- **Makes real-world connections and shows students how science is useful in many careers and in daily life.**
- **Encourages and prepares students to use scientific evidence to make decisions.**

# Issue-oriented science SEPUP-style

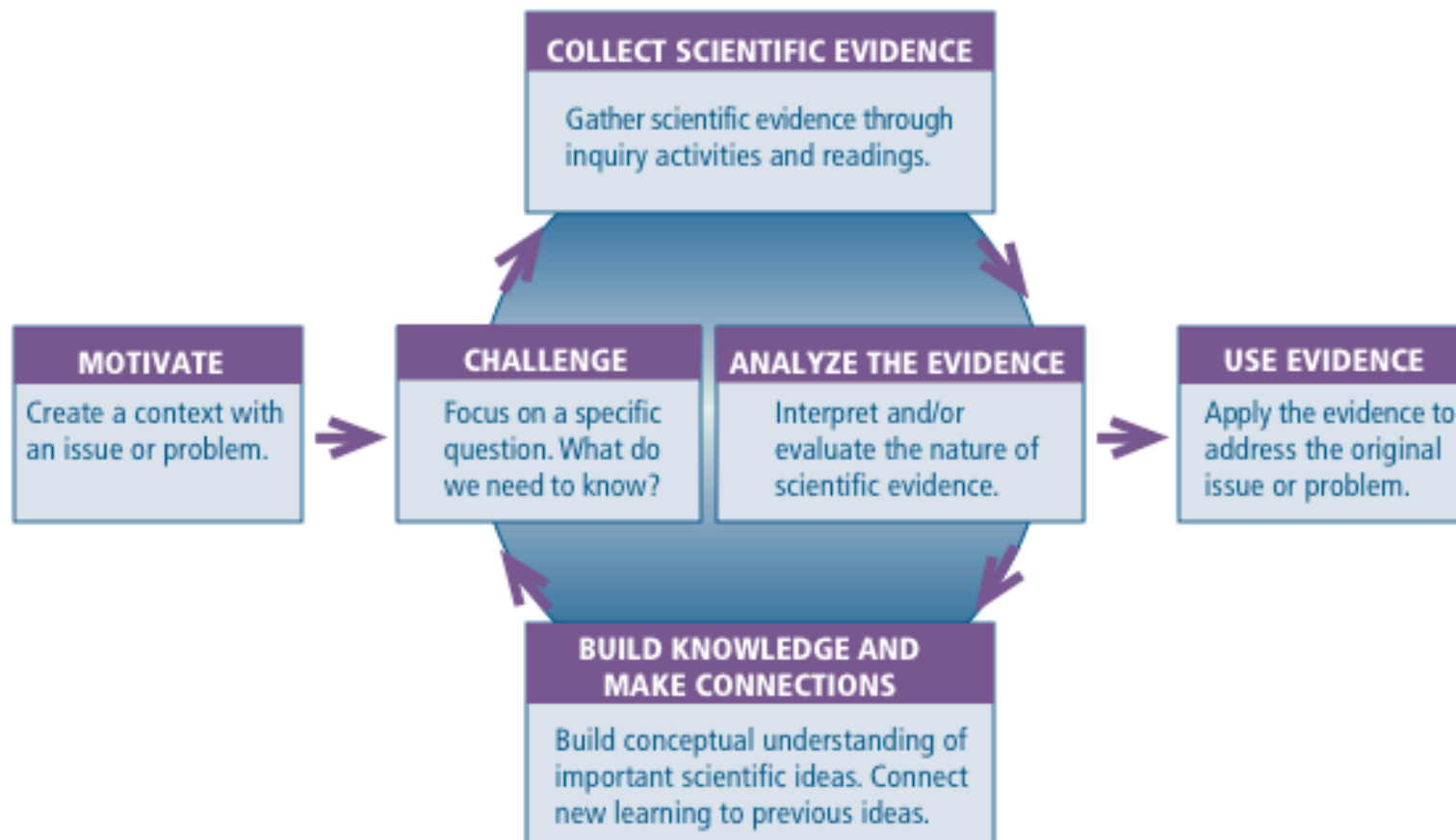
- The issue is not an add-on, but is woven into the curriculum and the issues and content are closely related.
- In most cases, does not advocate a particular decision, but does advocate the use of scientific evidence and concepts in the decision-making process.
- Encourages students to look at both sides of an issue and evaluate the **trade-offs** involved in a complex decision.

# Evaluating issues

The strongest issues:

- Require knowledge and understanding of important scientific concepts and processes
- Require an application of relevant scientific evidence
- Relate to scientific concepts and processes appropriate to grade level and subject matter
- Engage diverse groups of students
- Are complex enough to foster discussion and debate (Is there more than one solution or response?) OR clearly illustrate how science can inform a decision.

# Instructional model for issue-oriented science



# Literacy and assessment strategies are tied to issues

- Literacy strategies
  - Discussion strategies
  - Writing strategies
  - Reading strategies
  - Concept building strategies
- Assessment
  - Conceptual Understanding
  - Analyzing Data
  - Evidence and Trade-offs
  - Group Interaction

# Assessing Issue-Oriented Science

## Scoring Guide : Evidence and Trade-offs

Level 4 Above and beyond	Student accomplishes Level 3 and goes beyond in some significant way.
Level 3 Complete and correct	Student compares options using accurate and complete evidence and takes a position supported by the evidence. Student describes trade-offs of his/her decision.
Level 2 Almost there	Student discusses one or more options using accurate or relevant evidence and takes a position supported by the evidence BUT reasoning is incomplete and/or part of the evidence is missing.
Level 1 On your way	Student takes a position BUT provides reasons that are subjective, inaccurate, or nonscientific.
Level 0	Student's response is missing or irrelevant.



# Issue-oriented Science and Inquiry in SEPUP

<b>Less Emphasis On</b>	<b>More Emphasis On</b>
Discussing science in isolation	Discussing science concepts and understanding in the context of personal and societal issues
Working alone	Working with a group that simulates the work of a scientific community or policy group
Acquiring scientific information	Acquiring conceptual understanding and applying information and conceptual understanding in making personal, societal, and global decisions
Testing students for understanding at the end of the unit	Embedded assessments throughout the unit and culminating assessment activities
Closed questions with one correct answer	Open-ended questions that require students to explain phenomena or take positions backed by evidence