

Framework for an Open Inquiry Curriculum: Engaging Students Through Independent Research Projects in Local Environments

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Introduction to CAMEOS

• CAMEOS (Coastal, Atmospheric, & Marine Environmental Observing Studies) is an NSF GK-12 program based at the UC Davis Bodega Marine Laboratory

• CAMEOS fellows include: marine and terrestrial ecologists, oceanographers, evolutionary biologists, applied mathematicians, and computer scientists

CAMEOS Participants	
National Science Foundation	
8 Graduate fellows	
10 Teachers	
400 Students	
UC Davis and CSU Sonoma Faculty	
Oikonos and Ocean Discovery!	
Bodega Marine Laboratory	

Open Inquiry Curriculum for Independent Research Projects

• CAMEOS curriculum teaches science content and creative and critical thinking skills through scientific research.

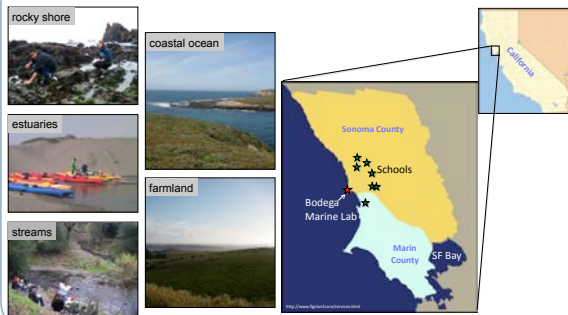
• In open inquiry investigations, students formulate questions and methods from personal observations and acquired knowledge.

• Fellows provide instructional scaffolding in learning activities for students to develop skills necessary for conducting scientific research.



Learning Skill	Open Inquiry Example
observational	watching prey escape predators
auditory	listening to group members' ideas
spatial	deciding where or when to collect data
visual	displaying data using scatter plots and bar graphs
mathematical	comparing means from experimental data
analytical	interpreting real-life meaning of results
linguistic	explaining experiment to an audience
intrapersonal	reflecting on potential experimental improvements
interpersonal	organizing and overcoming obstacles as a group

Independent Research Environments



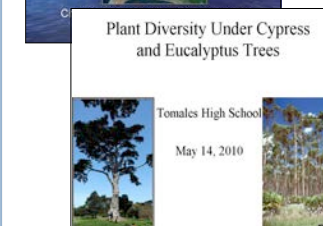
Scaffolding Sequence in Open Inquiry



Student Presentations and Assessment



Students arriving at Bodega Marine Laboratory for the CAMEOS symposium.



Example title slides from student presentations.

• The all day CAMEOS Symposium at the Bodega Marine Lab is the culminating event of the open inquiry project.

• Student practice communication skills and their understanding of scientific concepts through research presentations.



CAMEOS students preparing to present their findings to peers.

• CAMEOS fellows are designing a standardized student learning assessment tool on asking scientific questions.

Write scientific questions based on your observations of the organism on day 1 and day 2.



Organism on Day 1 Same organism on Day 2

• Students are assessed before and after their projects.

• Students develop scientific questions and experiments based on this unfamiliar scenario.

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