



center for Essential Science



Home

Projects

Science Resources

Publications

About Us

Climate Change
News

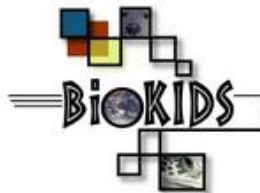
Example Lessons

Projects



In education, there is an urgent need to build a solid, research-based foundation about a new and essential focus area within pre-college science education: students' complex inquiry reasoning about the ecological impacts of global climate change. The **Change Thinking for Global Science: Fostering and Evaluating the Ecological Impacts of Climate Change** project serves as the major research vehicle for research questions in several interrelated areas. The research design involves a series of quasi-experimental studies that will complement each other and provide multiple lenses for understanding complex questions about learning. Our research questions are:

1. Which scientific content and reasoning skills are essential for 7-10th graders' complex reasoning and modeling of the ecological impacts of climate change? How are these manifested in content and inquiry reasoning progressions?
2. What dynamic visualization and modeling resources support the development of deep thinking about the ecological impacts of climate change?
3. What scaffolding and instructional activities support the development of deep thinking about the ecological impacts of climate change, including both content (ecological impacts) and complex reasoning components (scientific practices) of this knowledge, within cohorts of 7-10th graders in two new curricular units?



BioKIDS: Kids' Inquiry of Diverse Species

addresses both inquiry and life science content standards through exploration of local biodiversity, collection of animal species, and the investigation of individual animals and how animals interact with one another. Through these activities students gain a clearer understanding of how organisms meet their basic needs and the role the environment plays

in supporting a variety of organisms. In the BioKIDS curriculum, students use CyberTracker, an animal-tracking program that runs on hand-held computers (PDAs), to log animal sightings in their schoolyard. Students then analyze the data for class and team experiments. Another salient feature of the curriculum is the Critter Catalog, an on-line animal species database developed by the BioKIDS team. Students use this as the main resource when they write species accounts and conduct research on individual animals.



center for Essential Science



Home

Projects

Science Resources

Publications

About Us

Climate Change
News

Example Lessons

Science Resources



Developed by the Biodiversity Institute at the University of Kansas, [Lifemapper](#) is a professional tool for creating species distribution maps that display current and predicted ranges of where individual species live. Lifemapper makes use of massive archives of online geospatial species occurrence data and global climate and land cover data contributed by research biologists and biological museums around the world.

Critter Catalog



The [Critter Catalog](#) is a web resource that provides rich information on local populations including appearance, habitat, predator-prey relationships, and endangerment. Based on data from the Animal Diversity Web, the Critter Catalog transforms complex scientific content into a manageable and age-appropriate resource to support inquiry questioning and explanation building by 4–6th grade audiences.



The [Animal Diversity Web](#) (ADW) is an online database of animal natural history, distribution, classification, and conservation biology at the University of Michigan. Much of the content is provided by university undergraduates who submit reports on species as part of course requirements. Edited by biologists, the content includes media, descriptions of basic natural history and conservation status, a glossary and a taxonomic database used for validating and organizing content.



CyberTracker

[CyberTracker](#) is an application for mobile devices that enables users to record and organize field observations. Developed in South Africa as a conservation tool for native trackers, CyberTracker's customizable interface allows users to display collection data as both icons and text, making it ideal for elementary age students. CyberTracker is a core component of the BioKIDS science curriculum.



Search

TOOLS
Critter Catalog

Field Guides:
Tracks & Sign,
Invertebrate ID, Michigan
Habitat, Conservation
Status

Featuring
American pika
Ochotona princeps

Links:
[ChangeThinking](#)
[Resources/Curriculum](#)
[Downloads](#)

