

EARTHCOMM'S KEY FEATURES

- Community-based
- Inquiry methods
- Earth systems approach

Support for the *National Science Education Standards*



NATIONAL SCIENCE EDUCATION STANDARDS

EarthComm supports the changing emphases in science education:

- Teaching
- Professional Development
- Assessment
- Content
- Programs
- Systems



CHANGING EMPHASES IN SCIENCE EDUCATION

TEACHING STANDARDS

LESS EMPHASIS ON

MORE EMPHASIS ON

Treating all students alike and responding to the group as a whole

Understanding and responding to individual student's interests, strengths, experiences, and needs

Rigidly following curriculum

Selecting and adapting curriculum

Focusing on student acquisition of information

Focusing on student understanding and use of scientific knowledge, ideas, and inquiry processes

Presenting scientific knowledge through lecture, text, and demonstration

Guiding students in active and extended scientific inquiry

Asking for recitation of acquired knowledge

Providing opportunities for scientific discussion and debate among students

Testing students for factual information at the end of the unit or chapter

Continuously assessing student understanding

Maintaining responsibility and authority

Sharing responsibility for learning with students

Supporting competition

Supporting a classroom community with cooperation, shared responsibility, and respect

(National Science Education Standards, page 52)



CHANGING EMPHASES IN SCIENCE EDUCATION

SCIENCE CONTENT STANDARDS

LESS EMPHASIS ON

MORE EMPHASIS ON

Knowing scientific facts and information

Understanding scientific concepts and developing abilities of inquiry

Studying subject matter disciplines (physical, life, Earth sciences) for their own sake

Learning subject matter disciplines in the context of inquiry, technology, science in personal and social perspectives, and history and nature of science

Separating science knowledge

Integrating all aspects of science content and science process

Covering many science topics

Studying a few fundamental science concepts

Implementing inquiry as a set of processes

Implementing inquiry as instructional strategies, abilities, and ideas to be learned

(National Science Education Standards, page 113)



CHANGING EMPHASES IN SCIENCE EDUCATION

PROMOTING INQUIRY

LESS EMPHASIS ON

MORE EMPHASIS ON

| | |
|---|---|
| Activities that demonstrate and verify science content | Activities that investigate and analyze science questions |
| Investigations confined to one class period | Investigations over extended periods of time |
| Process skills out of context | Process skills in context |
| Individual process skills such as observation or inference | Using multiple process skills--manipulation, cognitive, procedural |
| Getting an answer | Using evidence and strategies for developing or revising an explanation |
| Science as argument and explanation | Science as exploration and experiment |
| Providing answers to questions | Communicating science explanations about science content |
| Analyzing and synthesizing <u>data without defending a conclusion</u> | Analyzing and synthesizing data after <u>defending conclusions</u> |
| Doing fewer investigations in order to leave time to cover large amounts of content | Doing more investigations in order to develop inquiry skills and deeper content knowledge |
| Concluding inquiries with the result of the experiment | Applying the results of experiments to scientific arguments and explanations |
| Management of materials and equipment | Management of ideas and information |
| Private communication of student ideas and conclusions to teacher | Public communication of student ideas and work to classmates |

(National Science Education Standards, page 113)

