


Making a Treehouse Webpage and National Science Standards for High School Students

Summary

- Conducting scientific investigations and building a treehouse webpage meets or could meet almost all of the National Science content Standards for Grades 9-12
- Conducting scientific investigations of various types and building a treehouse webpage to illustrate the research process and conclusions drawn fits extremely well with shifting emphasis in the national science standards from focusing on specific knowledge and practices to focusing more on the scientific inquiry process and sharing and applying knowledge beyond the confines of the science classroom.

National Content Standards

 = Treehouse building definitely meets this standard






















 = Treehouse building could meet this standard depending upon research problem

TABLE 6.10. CONTENT STANDARDS, GRADES 9-12

UNIFYING CONCEPTS AND PROCESSES	SCIENCE AS INQUIRY	PHYSICAL SCIENCE	LIFE SCIENCE
Systems, order, and organization 	Abilities necessary to do scientific inquiry 	Structure of atoms	The cell
Evidence, models, and explanation 	Understandings about scientific inquiry 	Structure and properties of matter	Molecular basis of heredity
Change, constancy, and measurement 		Chemical reactions	Biological evolution 
Evolution and equilibrium 		Motions and forces	Interdependence of organisms 
Form and function 		Conservation of energy and increase in disorder	Matter, energy, and organization in living systems 
		Interactions of energy and matter	Behavior of organisms 
EARTH AND SPACE SCIENCE	SCIENCE AND TECHNOLOGY	SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES	HISTORY AND NATURE OF SCIENCE
Energy in the earth system	Abilities of technological design 	Personal and community health 	Science as a human endeavor 
Geochemical cycles	Understandings about science and technology	Population growth	Nature of scientific knowledge
Origin and evolution of the earth system 		Natural resources 	Historical perspectives
Origin and evolution of the universe 		Environmental quality 	
		Natural and human-induced hazards 	
		Science and technology in local, national, and global challenges 	

Above and below from the National Science Teachers Association Website
<http://books.nap.edu/html/nses/6a.html>

The National Science Standards published in 1996 reflect a changing national emphasis from learning facts and figures to a focus on inquiry-based learning and mastery of broader scientific concepts.

Changing Emphases

The *National Science Education Standards* envision change throughout the system. The science content standards encompass the following changes in emphases:

<i>Less Emphasis On</i>	<i>More Emphasis On</i>
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 and science process	Integrating all aspects of science content
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
CHANGING EMPHASES TO PROMOTE INQUIRY	
<i>Less Emphasis On</i>	<i>More Emphasis On</i>
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
Emphasis on 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 exploration and experiment	Science as argument and explanation
Providing answers to questions about science content	Communicating science explanations
Individuals and groups of students analyzing and synthesizing data without defending a conclusion	Groups of students often analyzing and synthesizing data after defending conclusions
Doing few investigations in order to leave time to cover large amounts of content	Doing more investigations in order to develop understanding, ability, values of inquiry and knowledge of science content

CHANGING EMPHASES TO PROMOTE INQUIRY

<i>Less Emphasis On</i>	<i>Less Emphasis On</i>
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