

An Introduction to the Revised Southern Region 4-H Wildlife Projects

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Abstract: During the 1970s, a partnership between the United States Department of Agriculture and the National 4-H Council led to the creation of the Southern Region Wildlife Project materials. Fifty-one publications, based on a variety of fish and wildlife-related subject matter, were created. In 1999, the North Carolina Department of 4-H and Youth Development received a grant from the United States Fish and Wildlife Service to revise the publications. Twenty-four of the original 51 publications were selected for revision by Extension Specialists and other wildlife biologists in several southern states. Content and format for the projects were updated in the revised projects. Each revised project is inquiry-based, includes an experiential activity, and focuses on one of three life skills. In North Carolina, we have marketed the availability of the projects during the annual 4-H Volunteer Leaders' Conference. Additionally, the projects have been recommended as supplemental tools for youth involved in the 4-H Shooting Sports program, the Wildlife Habitat Evaluation Program, and 4-H presentations. Although anecdotal feedback has been positive, we have no formal indication that project availability has increased youth involvement in wildlife-related activities.

Key Words: 4-H, education, wildlife projects, youth

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Creation of the Southern Region 4-H Wildlife Projects

Exposure to wildlife issues at a young age is pertinent to creating a well informed, educated, and involved voting population. According to Simmons (1991), knowledge of natural resource issues and natural systems, problem-solving skills, attitudes, and the development of self-esteem all contribute to the development of responsible behavior on behalf of the environment. In addition, youth can transfer information on environmental issues facing a community to adults (Vaughan et al. 2003). In response to the need to educate 4-H youth about wildlife, a partnership developed between the United States Department of Agriculture and the National 4-H Council in the 1970s. The partnership led to the creation of the Southern Region Wildlife Project materials. Fifty-one publications, based on a variety of fish and wildlife topics, were created. Projects ranged from activities focused on a specific animal and its habitat to learning skills like taxidermy and fly-tying. Titles included *Learning About Amphibians*, *Tanning Skins*, *Wildlife Foods*, *White-tailed Deer*, *Wildlife Careers*, and *Bass and Bream Pond Management*.

The wildlife projects were originally designed so that youth could successfully complete a project without considerable adult assistance. The broad range of categories was meant to appeal to boys and girls and urban and rural youth. Some of the original projects were basic instruction booklets. For example, *Making Artificial Lures* (SW 439) provided a brief history of fishing with artificial lures and the materials needed to make basic artificial lures. The construction steps for 7 different lures were described. At the conclusion of the activity, youth were encouraged to share their lures with their 4-H club, demonstrate how to make the lures, visit a store that sells different lures, and fish with the lures. The activity was hands-on, but it did not involve inquiry or use of the scientific method. Critical thinking skills were not challenged. Teaching technical skills without stressing problem-solving skills does not create youth able to make thoughtful decisions (Arvai et al. 2004). In addition, youth will not understand importance of the context unless they have the ability to apply the skills in a range of situations (Yager 1997).

Other projects described the natural history of an animal, similar to an excerpt from an encyclopedia. For Example, *Learning About Lizards* (SW423) incorporated text that discussed the skin of lizards and other visible features. The life cycle of a lizard was explained. Six general categories of lizards were shared with the reader. After all the reading, youth had the choice of four projects:

- 1) Write a natural history paper about a lizard in your state and present your paper to a group (4-H or school).
- 2) Visit a museum or zoo that has lizards on display and learn how they are kept in captivity and report to your 4-H group what you learned.
- 3) Do a field study and look for lizards, recording information about what you find (date, time, habitat, location, weather conditions, and behavior).
- 4) Keep lizards as pets for close study.

The learn-by-doing approach of 4-H was not fully incorporated into the materials, nor were they a good example of inquiry-based activities. Inquiry-based activities involve learning through direct interaction with materials and phenomena, multiple approach avenues to a new topic, participant control over learning direction, and cooperative learning (Kluger-Bell 2000).

Need for Wildlife Curricula

In 1993, the Cooperative States Research Education and Extension Service (CSREES) Families, 4-H, and Nutrition Group created the National 4-H Curriculum Collection. Curriculum guides were developed and pilot-tested by 41 participating states, then made available online to 4-H programs and other non-formal youth development organizations. A current search of this collection reveals limited curricula in the environmental science category (CSREES 2006). Five curriculum series are listed under the Environmental Sciences category: *Afterschool Agriculture*, *Exploring Your Environment*, *Fishing for Adventure*, *Forestry*, and *Outdoor Adventures*. No titles include “wildlife”, and curricula do not hone in on specific wildlife interests.

The *Exploring Your Environment* series has the most information pertaining to wildlife. It is divided into three age ranges; 9-12, 13-15, and 16-19. *Eco-Wonders* is the first in the series, and youth can work their way through the curriculum guide and learn about food webs, investigate the characteristics of mammals and the components of habitats, and practice making a bird’s nest. Level two, *Eco-Adventures*, focuses mainly on plants but does include an activity on bird identification and migration, animal tracks, and wildlife habitat. *Eco-Actions* is the third level in the *Exploring Your Environment* series and leads youth through a more in-depth discussion of food webs, invasive species, and animal activity. *Fishing for Adventure* covers general natural history of fish, identification, and fishing as a sport. Other curricula in the Environmental Sciences category do not address any wildlife-related topics. These activities from the National 4-H Curriculum Collection are inquiry-based, develop critical thinking skills, and challenge youth to direct their own learning, but provide limited coverage of wildlife related topics.

Development of Revised Southern Region 4-H Wildlife Projects

In 1999, North Carolina State University (NCSU) Department of 4-H and Youth Development received a grant from the United States Fish and Wildlife Service to revise the original Southern Region 4-H Wildlife publications. Other funding for the project came from the Renewable Resources Extension Act and the North Carolina 4-H Curriculum Fund. The project was based at NCSU and led by Dr. Ed Maxa, Extension 4-H Specialist, and Dr. Christopher Moorman, Extension Wildlife Specialist. Content and format for the projects were to be updated in the revised projects. Project revisions were directed at two distinct age categories, 9-12 and 13-15. Focus was guided towards one of three life skill developments: critical thinking, wise use of resources, and communication. The revised Southern Region 4-H Wildlife Projects were inquiry-based, and each included an experiential activity. The new format provided a curricula base that addressed the need for knowledge about natural resources and an activity that engaged critical thinking skills. Teaching science through inquiry provides the context for deeper understanding of how science is conducted, as well as understanding the nature of science (Eick 2000). It also is through inquiry-based science that youth gain problem solving and communication skills that will make them effective citizens in the future (Alberts 2000).

Twenty-four projects were selected for revision or creation based on the list of the original 51 publications (Table 1). A basic needs assessment survey to 100 4-H agents in North Carolina assisted in the final selection. Agents were asked which projects they currently used and which they would use more often if they were updated.

Specialists from several states were invited to join the revision team. Contributing authors were based in Extension programs at Auburn University, Clemson University, the University of Tennessee, and NCSU. Other contributions came from biologists located at the North Carolina Museum of Natural Sciences, Virginia Department of Game and Inland Fisheries, Mecklenburg (NC) County Government, and the North Carolina Stream Watch Program. The writing team was given a time frame of June through October 2000 to update the curricula, develop additional pieces if needed, address inquiry learning within the activity, identify a life skill focus, and propose assessment questions. Writers were reminded that education on the subject matter should come through the activity, not through excessive background reading.

Format of Revised Southern Region 4-H Wildlife Projects

Writers were provided with a template to follow during the process. The template created a standard that would allow the editor to pull out the needed information. A freelance writer, editor, and graphic designer were subcontracted to create the final design and layout of the projects. Activity layout follows a pattern of a hiking adventure, and activities for both age levels were designed similarly.

Title

A catchy title grabs the attention of users. The titles often use alliteration, such as *Talking Turkey* and *Animal Appetites*. Other titles, like *Beavers: Ecosystem Engineers* and *Estuaries: Nature's Water Filters*, pique interest. The title and age level are easily located, with a graphic to identify the project.

Age Level

Projects are divided into two age categories, based on the complexity of the material and learning levels. Youth ages 9-12 are more interested in tangible ideas, need more guidelines, and like to work in groups. Youth aged 13-15 enjoy exploring beyond their immediate neighborhood, are more self-directed in their learning, and generate new questions about the topic. These characteristics are generalizations but are provided to 4-H leaders as a guide (National 4-H Council 1983).

Life Skills

Each project focuses on one of three life skills that closely fit within natural resource subject matter: critical thinking, wise use of resources, and communication. *Critical thinking* stresses strategies for analyzing, comparing, reasoning, and reflecting. *Wise use of resources* focuses on using sound judgment and not wasting natural resources. *Communication* is the exchange of thoughts, information, or messages between individuals.

Project Skill, Objective, and Success Indicator

The project skill describes what will be learned in the project. For example, learning the nesting and feeding requirements of local birds is the project skill for *Bird Furniture*. A brief subject matter content objective was needed to inform the youth what they would be doing in the project. Though similar to the project skill, the objective describes the hands-on activity. In *Bird Furniture*, the objective is to construct and erect birdhouses and/or feeders using scrap materials. The success indicator is a clue to let the youth know when they have successfully completed the project. Youth that complete the *Bird Furniture* project have constructed functional bird furniture using recycled materials.

Table 1. Original and revised Southern Region Wildlife Project titles.

Original Southern Region Wildlife Projects	Current Southern Regional Wildlife Projects (age group)
Leader's Guide	
Quail	
Mourning Dove	Nest Structures for Mourning Doves (9-12)
Wild Turkey	Talking Turkey (13-15)
Non-Game Birds	
Birds of Prey	
Waterfowl Management	Houses for Wood Ducks (13-15)
Wildlife Careers	Would You Like to be a Wildlife Professional? (13-15)
Bird Houses and Furniture	Bird Furniture (9-12)
Minor Game Birds of the Southeast	
Cottontail Rabbits and Other Rabbits	
Raccoon	
Squirrel	
White-tailed Deer	
Minor Game Mammals of the Southeast	
Fish Identification and Display	
Bass and Bream Pond Management	Pond Management: Good Fishing in the Balance (13-15)
Fish Culture	
Raising Earthworms	Earthworm Composting (9-12)
Raising Crickets	
Learning About Snakes	Southeastern Serpents (9-12)
Learning About Lizards	Leaping Lizards (9-12)
Learning About Turtles	Turtle Tales (9-12)
Ponds and Lakes	
Beaver Ponds	Beavers: Ecosystem Engineers (9-12)
Streams	Monitoring Macroinvertebrates (13-15)
Providing Needs of Wildlife	Farming for Wildlife (13-15)
Beach	
Estuary	Estuaries: Nature's Water Filters (13-15)
Urban and Backyard Wildlife	Urban Wildlife: Our Animal Neighbors (13-15)
Wildlife Foods	Animal Appetites (9-12)
Making a Wildlife Resource Map	
Wildlife Ecology	
Furbearers and Trapping	
Taxidermy	
Tanning Skins	
Animal Tracks	Nature's Footprints (9-12)
Making Artificial Lures	Fishing Bait (9-12)
Archery	Tools for Archers (9-12)
Introduction	
Fishing, Spin, Fly Casting and Safety	
Suggested Wildlife Activity by Month	
Record of Wildlife Observations	
Wildlife Laws and Enforcement	
Hunting and Fishing Sportsmanship	Hunting and Fishing Sportsmanship (13-15)
Making a Freshwater Aquarium	
Economic Importance of Wildlife	
Wildlife Control	Sharing Space with Wildlife (13-15)
Learning About Amphibians	Pools of Life (9-12)
Handling and Care of Game and Fish	
	Butterfly Buffet (13-15)
	Wild Game: From Field to Table (13-15)

Provisions Needed

To keep with the theme of an adventure, materials needed to complete the project are listed as provisions needed. Most materials easily can be found around the home. Some activities, especially the upper age level, require assistance from adults in handling tools or sharp instruments.

Trailhead

The trailhead challenges youth to relate to a previous experience with the subject matter and consider why they topic should be important to them. According to Lord (1999), lasting knowledge occurs when the learner attempts to make sense of new information by applying it to his or her already perceived notions about the topic. True understanding takes place when the new information is properly assimilated. For example, the *Beavers: Ecosystem Engineers* activity begins with the questions “Have you ever noticed flooded areas of the highway or near your home where water was absent previously? Did you observe more dead trees than usual?”

Trailblazing

Instead of beginning the activity with a reading, youth are encouraged to conduct a hands-on activity related to the subject matter. Many of the activities are similar to those found in the original projects, but are rearranged to fit an inquiry-based model. Going back to the original project *Making Artificial Lures*, the revised project *Fishing Bait* encourages youth to speak with local anglers about the baits they use. They are then challenged to find 10 natural baits, then collect or make replicas of 10 artificial baits.

Field Guide

The activity is followed by the field guide section, which provides more in-depth information pertaining to the topic. This section contains important vocabulary words or interesting facts pertaining to a particular species of wildlife. In *Animal Appetites*, youth are introduced to the words “fruits” and “mast”, as well as the plants that provide these different types of foods. This information is related back to the activity or combined with the knowledge gained during the activity, in order to answer questions in the field notes section.

The Extra Mile

The extra mile encourages youth to share their new knowledge with a larger audience. For example, in *Turtle Tales*, youth are encouraged to interview a herpetologist. The *Monitoring Macroinvertebrates* project inspires youth to share new knowledge about water quality with local public officials.

Field Notes

To develop critical thinking skills and assess learning, revision writers were charged with creating two sets of questions for each topic. One set of questions would allow the youth to share what they did, process what they did, and think of ways it could have been done differently. The second set of questions tested the student’s ability to apply the focal life skill to other areas of their life. These questions were then assimilated into the field notes section, which is divided into four areas; share, process, generalize, and apply. These areas encourage youth to use critical thinking skills and share and apply the knowledge they have gained.

The final layout by the graphic designer and editor included many colors and illustrations. Illustrations were clear enough for easy printing in grayscale, if desired. Final projects were placed on the North Carolina 4-H web site as Adobe Acrobat® files where they could be downloaded and printed (NC 4-H 2006). A link to the web site is also provided on the NCSU Extension Forestry and Extension Wildlife web sites.

Current Usage of Revised Southern Region Wildlife Projects

When the wildlife project revisions were completed, an email announcement was sent to all wildlife and 4-H curriculum specialists in the Southern Region. In North Carolina, the wildlife publications are shared annually with 4-H agents and volunteer leaders through presentations and exhibits during the statewide 4-H Volunteer Leaders' Conference. Conference participants are encouraged to share the publications with county youth as ideas for presentations and project record books. The projects also are promoted as supplemental materials for the 4-H Wildlife Habitat Evaluation Program (WHEP) and the Shooting Sports program.

Use of the revised projects is difficult to track. North Carolina ES-237 data collected annually does not specifically track the use of the wildlife projects. The data can be subjective, since the categories are broad and often overlap. There is no clear definition to differentiate between a forestry project and a wildlife or fisheries project. According to the North Carolina ES-237 data, there appears to be a downward trend in the number of youth participating in wildlife projects and programming (Figure 1). The forestry, wildlife, and fisheries categories were lumped into the Environmental Projects category in 2004, so it is difficult to discern in which areas youth were participating. The average number of 4-H wildlife projects completed annually in North Carolina is 3,295, with youth participating in approximately 5,510 other wildlife programs per year.

The downward trend in North Carolina is similar to the national trend of decreased participation in wildlife programming (Figure 2). National 4-H Headquarters compiles state ES-237 data into an annual report (National 4-H Headquarters Enrollment Statistics 2006). Data-reporting problems occurred in 2004, and therefore no data were given. Because of decreased reporting categories, the number of youth participating in wildlife and fisheries programming in 2005 appears to increase greatly. Wildlife and fishery programs are combined into a general Environmental Education/Earth Science category that includes participation in forestry, range science, geology, soils, hydrology, composting, and recycling. The reduced categories will continue in national reporting, though individual states may choose to use more distinct categories for their ES-237 reports.

Tracking web site hits also has proven unreliable. The North Carolina 4-H program does not track web site hits, and therefore it could not provide information on how many times the web page containing the Southern Region Wildlife Projects was accessed. NCSU Extension Forestry group does track web site hits, but the page introducing visitors to 4-H programming includes multiple programs. Therefore, we only can provide numbers of hits for the general 4-H Programming page (Figure 3). The number of web site hits increased following the 4-H Volunteer Leaders' Conference in February 2006 and prior to the NC WHEP competition in April 2006. Peak hits in May could correlate with 4-H youth preparing for presentations in June and July. Changes in web site tracking software do not allow for viewing data from previous years.

In North Carolina, agents and volunteer leaders in counties that actively participate in the 4-H WHEP program often provide anecdotal comments that the wildlife projects are useful supplements to national and state WHEP guides. The projects also provide an opportunity for 4-H youth to apply the information they have learned through the WHEP program. Some Shooting Sports clubs also have shared that they use the wildlife projects as supplemental curricula.

Future of the Southern Region Wildlife Projects

The availability of the wildlife projects on the internet provides easy and free access, yet we believe that recognition of these materials is low within North Carolina and throughout the Southern Region. Wildlife Specialists, acknowledging the lack of current wildlife-focused 4-H curricula and an overall apparent downward trend in wildlife programming, are encouraged to share these materials with their state constituents. Groups that are involved in the 4-H Wildlife Stewards Program also will find the wildlife projects to be valuable supplemental materials to support the mission of the program (Hosty

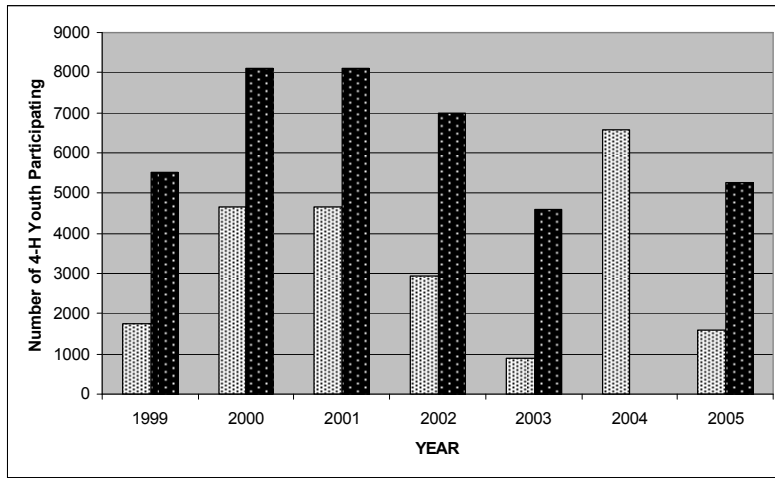


Figure 1. North Carolina ES-237 data relating to wildlife projects and additional wildlife programming from 1999-2005.

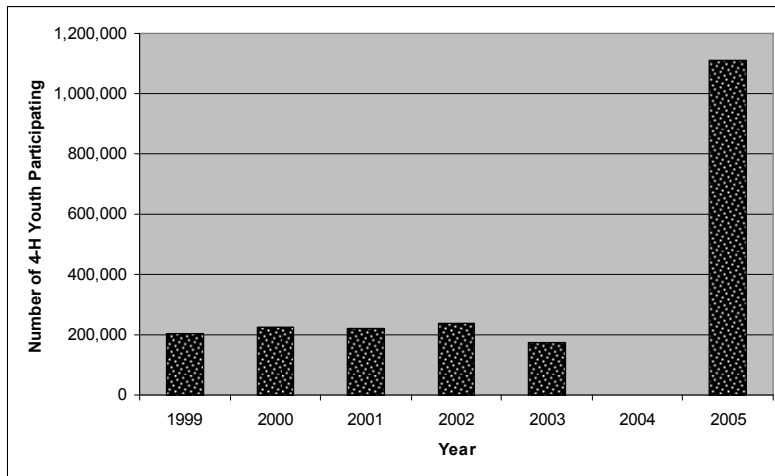


Figure 2. National ES-237 data for number of 4-H youth participating in wildlife and fisheries programming from 1999-2005.

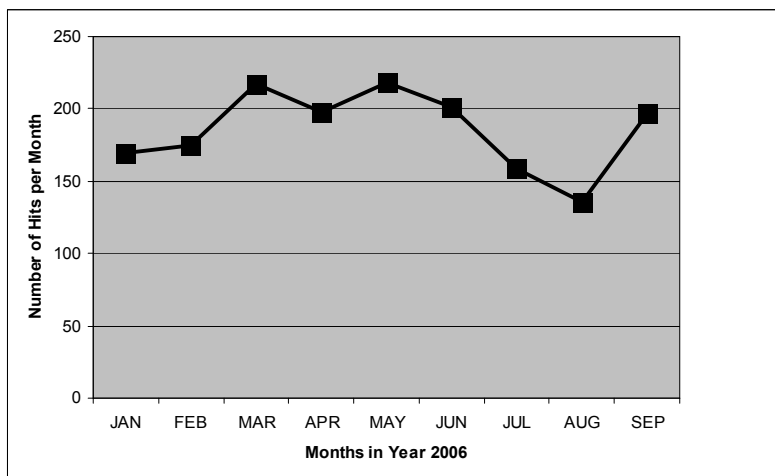


Figure 3. Number of hits per month for the NCSU Extension Forestry 4-H Programming web page in year 2006. <http://www.ces.ncsu.edu/forestry/4hprogramming.htm>.

2005). In addition, these materials can infuse new interest in 4-H wildlife presentations and project record books.

The increasing number of 4-H Afterschool Programs is an excellent gateway for the use of these materials in a formal classroom setting. National Science Education Standards require the inclusion of inquiry-based science at all levels of learning (NSTA 2006). Traditional textbooks do not meet this requirement, so teachers continually search for supplemental materials to help fill the void. The science teaching standards describe expectations for science teachers at all grade levels. They are divided into 6 areas:

- planning of inquiry-based science programs
- action taken to guide and facilitate student learning
- assessments made of teaching and student learning
- development of environments that enable students to learn science
- creation of communities of science learners, and
- planning and development of the school science program.

The revised wildlife projects fit these standards for classroom teachers.

Discussion continues on how best to collect data on the use of the wildlife projects. North Carolina is discussing the addition of a separate listing on the ES-237 reports to collect data from individual counties which will increase data accuracy. The commitment remains in North Carolina to inform 4-H agents and volunteer leaders about the availability of the materials.

Literature Cited

- Alberts, B. 2000. Some thoughts of a scientist on inquiry. Pp. 3-13 *in*: J. Minstrell and E. van Zee (Eds.), *Inquiring into Inquiry Learning and Teaching in Science*. American Association for the Advancement of Science, Washington, D.C.
- Arvai, J. L., V. Campbell, A. Baird, and L. Rivers. 2004. Teaching students to make better decision about the environment: Lessons from the decision sciences. *The Journal of Environmental Education* 36(1):33-44.
- CSREES. 2006. National 4-H Curriculum. Website. <http://www.n4hccs.org/>.
- Eick, C. J. 2000. Inquiry, nature of science, and evolution: The need for a more complex pedagogical content knowledge in science teaching. *Electronic Journal of Science Education* 4(3). <http://unr.edu/homepage/crowther/ejse/eick.html>.
- Hosty, M. 2005. 4-H wildlife stewards: A new delivery model for 4-H. *Journal of Extension* 43(5). <http://www.joe.org/joe/2005october/iw3.shtml>.
- Kluger-Bell, B. 2000. Recognizing inquiry: Comparing three hands-on teaching techniques. Pp. 39-50 *in*: J. Butler (Ed.), *Foundations: A Monograph for Professionals in Science, Mathematics, and Technology Education*. National Science Foundation, Arlington, VA.
- Lord, T. 1999. A comparison between traditional and constructivist teaching in environmental science. *Journal of Environmental Education* 30(3): 22-28.
- National 4-H Council. 1983. *Wildlife Projects Leaders Guide*. SW402.
- National 4-H Headquarters Enrollment Statistics. 2006. http://www.national4-Hheadquarters.gov/library/4h_stats.htm.
- NC 4-H. 2006. NC 4-H Youth Development, Free 4-H Online Curriculum Material. Website. North Carolina State University. <http://www.nc4h.org/teachers/enrichment/index.php>.
- NSTA. 2006. National Science Teachers Association, National Science Education Standards. Website. <http://www.nsta.org/standards>.
- Simmons, D. 1991. Are we meeting the goal of responsible environmental behavior? An examination of natural and environmental education center goals. *Journal of Environmental Education* 22(3):16-21.
- Vaughan, C., J. Gack, H. Solorazano, and R. Ray. 2003. The effect of environmental education on schoolchildren, their parents, and community members: A study of intergenerational and intercommunity learning. *Journal of Environmental Education* 34(3):12-22.
- Yager, R. E. 1997. Science education as a science? *Electronic Journal of Science Education* 2(1). <http://unr.edu/homepage/jcannon/ejse/ejsev2n1.html>.