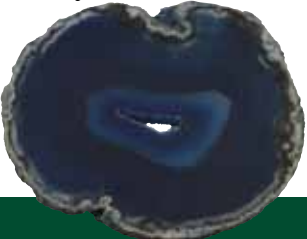


# Science Discovery Series 1 and 2

## Supporting School-Age Accreditation and Quality Programming

Science and scientific method can be webbed into many School-Age program activities. Many activities are designed as long-term projects where children and youth build on their science knowledge and skills over time. *Science Discovery* supports the National AfterSchool Association keys for human relationships, activities, indoor and outdoor environments and health, safety and nutrition.



## Opportunities for Youth Leadership and Development and Cross-age Teaching

A successful *Science Discovery* project requires youth to assume responsibility for planning as well as completing activities. Youth learn to be both leaders and team players. Once they've mastered some skills, they can help younger children learn to appreciate and have fun with science. Youth also develop leadership skills by organizing service learning projects. When youth enjoy science at a young age, career possibilities abound.

## Ideas! Ideas! Ideas!



*Science Discovery* offers the opportunity to use a variety of guest speakers, outside resources and field trips in the **Optional Activities** and **Take it Further** sections of the topics and projects. Websites for more information include:  
[www.discoveryscience.rutgers.edu](http://www.discoveryscience.rutgers.edu)  
[www.tryscience.com](http://www.tryscience.com)  
[www.usda.gov/news/usdakids](http://www.usda.gov/news/usdakids)  
[www.exploratorium.edu/science\\_explorer](http://www.exploratorium.edu/science_explorer), [www.ars.usda.gov/is/kids](http://www.ars.usda.gov/is/kids)

## Summary

Everyone who participates in the *4-H Science Discovery Series* project will have fun through hands-on learning about science. The discoveries planned with the children and youth will be fun and their interest in science will continue to grow into the future.

## Providing Quality Middle School and Teen Programming

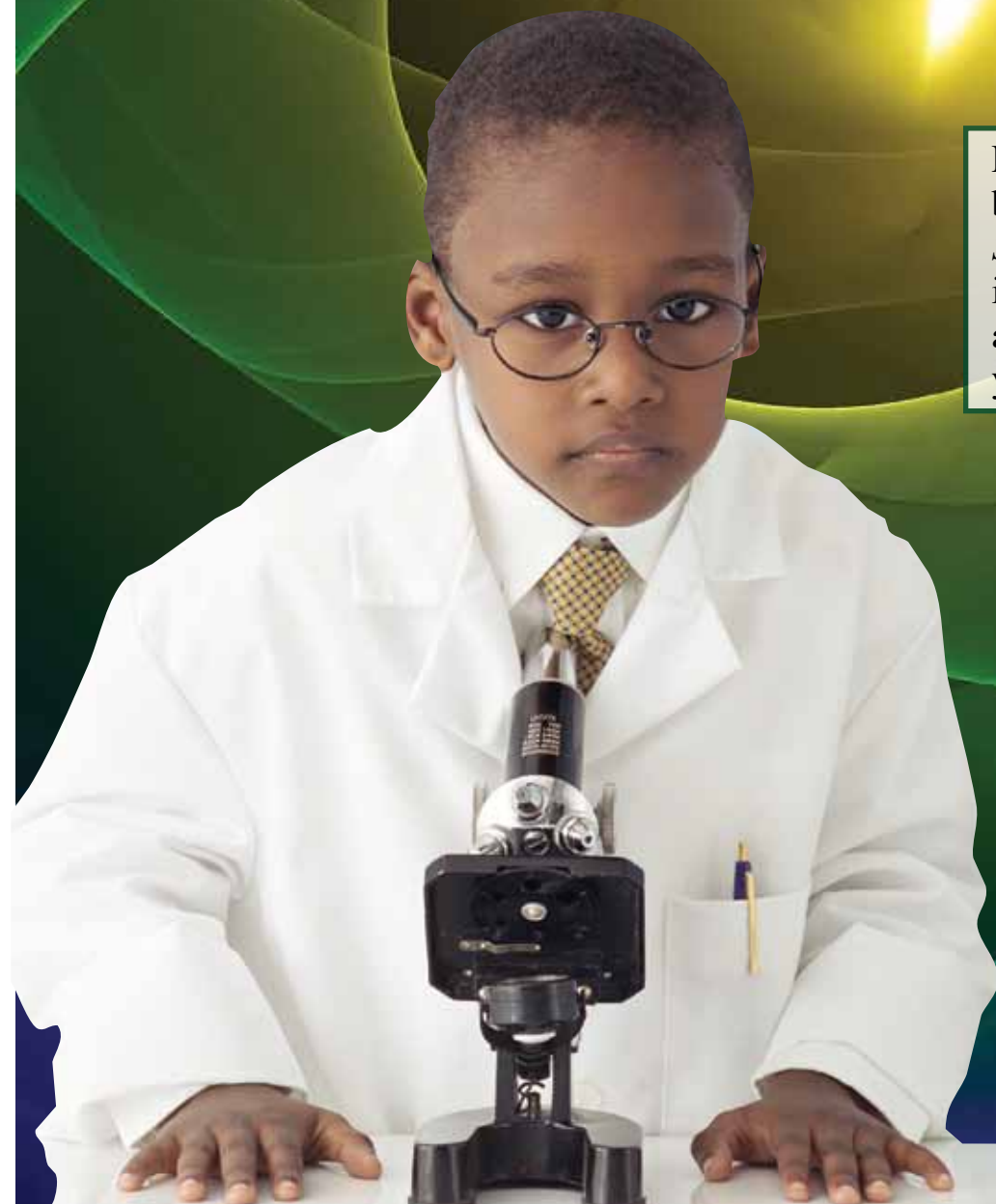
*Science Discovery* will appeal to children and youth in grades 3-7. The hands-on experiments and activities make science and learning fun. The youth will enjoy the opportunity to help plan and implement the activities. They will be excited about the difference they can make in their community through their service-learning projects and the lasting relationships and skills they develop.

## Essential Elements of 4-H Youth Development

Youth involved in 4-H know they are cared about and feel a sense of **BELONGING**; they exercise **INDEPENDENCE** by using decision-making and action to influence people and events; they develop a sense of **MASTERY** by learning skills needed in making positive career and life choices; and they experience **GENEROSITY** by helping others through community service. These elements support the Army Youth Development Components of Belonging, Success, Service and Independence.



# THE Army 4-H EXPRESS GUIDE TO Science Discovery Series 1 and 2



Learning science has never been so much fun! And, *Science Discovery* is as interesting for staff to teach as it is for children and youth to experience.

## Project Goals

The *Science Discovery* series helps young people develop skills by exploring specific areas of science. Each lesson plan outlines subject matter, life skill objectives, materials needed, background information, a lesson outline containing detailed instructions, activities, references and resources, glossary and evaluation. There are two books in this series.

This curriculum is designed for School-Age and Middle School Grades 2-8

## Four Fun Activities

**1** There is so much to learn about whales. Understanding their size is one of the first steps. Using the activity, **Bring A Whale Into The Classroom, Science Discovery 1, pages 12-14**, have youth help measure and mark the parts of the whale such as the end of the mouth, eyes, ears, flippers, blowholes, dorsal fin, and flukes. When all the marks are made, connect them with a chalk line.

**2** Help youth understanding the water cycle by completing the activities in **Science Discovery 1, page 51 and Water Cycle Puzzle, page 52**. Youth will learn ways water is used, how it is added to the earth's supply, talk about forms of precipitation, and how water is returned to the atmosphere.

**3** Spiders, spiders, spiders! It's easy to become a spider detective to learn more about them and where they live. Take the group on a spider hunt using the information in the curriculum describing the "signs" of spiders. Then use the **Discovery Journal, page 88, Science Discovery 2**, to record the results.

**4** Wow! It's humid. **How Much Water does the Air Hold?, Science Discovery 2, pages 47-48**, will help youth explore air temperature and moisture as they discover why some days are more humid than others.



## Experiential Learning



Experiential Learning engages children and youth while they learn, share, and grow through their 4-H experiences. With an adult as the coach, the first step is "doing" or exploring. Next, youth share what they did and discuss the experience with their peers. After they've identified the skills and knowledge gained, help them determine how to apply these to other situations in their lives. Suggested questions include:

- What was most difficult about in this project?
- What was most fun?
- Which science topic was your favorite? Why?
- How you can apply what you learned about this topic to other things in life?

## Project Activity Guides and Target Age Groups

**Science Discovery 1** focuses on basic science activities built around nature and the environment. Children will explore the world around them looking specifically at rocks, minerals and trees, will learn about whales and how they differ from fish and will also focus on environmental issues like recycling, water quality and conservation.

**Science Discovery 2** encourages more in-depth exploration for children and youth as they learn about trees, spiders, space, oceanography and environmental conservation. This curriculum specifically suggests grade levels for each group of activities.

**Keep Discovering!** I a reference guide for leaders to help youth find more information about science or other topics.



## Character Connection

Character Counts everywhere...all the time. That's particularly true when completing and reporting science experiments and activities? Honor the Six Pillars of Character by cooperating and being a good team player, by not cutting corners in the activities and by accurately sharing and reporting results.

Additional character resources can be found at:  
[www.4-hmilitarypartnerships.org](http://www.4-hmilitarypartnerships.org)

## Related 4-H Projects

Science concepts can be found in nearly every 4-H project. Explore *Aerospace Adventures, Computer Power Unlimited, Down-To-Earth Gardening, Insectaganza of Excitement, Foods and Nutrition, Keeping Fit and Healthy*, and *Pets* to find more science related topics.

## Integrating Technology

Science and discovery have always used some form of technology and today they are so closely linked that most scientific discoveries require the use of multiple technologies. The Internet is a resource for research, planning, and communicating. GPS/GIS technology helps locate and catalog resources globally and digital photography and videography helps document experiments and experience. Computers and technology have become an integral part of our lives, research, science and discovery.

The Internet is filled with websites just for children such as: [Google](http://www.google.com), [SafeSearch for Kids](http://www.safesearch.com); [Yahooligans!](http://www.yahooligans.com); [Ask Jeeves for Kids](http://www.askjeeves.com); and [Net Nanny](http://www.netnanny.com). There are also children's Web directories and reference books that list web sites for kids by subject. For additional resources, be sure to visit the Science Discovery Series Websites at [www.discoverscience.rutgers.edu](http://www.discoverscience.rutgers.edu) and Children, Youth and Families Education and Research Network <http://www.cyfernet.org> for practical research-based information from the nation's leading universities.

## Linking to the Army's Four Service Areas and Baseline Programming

**Sports, Fitness and Health Options**  
Many of the life skills developed when using *Science Discovery* apply to this CYS Service Area. Teamwork along with decision making and managing resources are important in fitness and health options. Activity number 51 in **Volume 2, What Should We Do Today, pages 61-62**, fits well into the Sports, Fitness and Health Option.

**Arts, Recreation and Leisure Activities**  
Making bark rubbings of trees or a book of leaves is useful in tree identification but it can also turn into art for others to enjoy. *Science Discovery* also includes puzzles and word searches that can be completed in leisure time. **Be a Leaf Detective, page 119, Vol. 2 and Why is Water Important - Word Search, page 49, Vol. 1**; fit into the Arts, Recreation and Leisure Activities Option.

**Life Skills, Citizenship, and Leadership Opportunities**  
Activities related to environmental concerns like recycling and water quality are included in this project. Two specific activities **Where Does Your Garbage Go?, Volume 2, pages 141-196 and Good to the Last Drop, Volume 1 pages 43-58**, fit well into Life Skills, Citizenship and Leadership Opportunities.

**Academic Support, Mentoring, and Intervention Services**  
The *Science Discovery* series supports critical thinking, decision making and problem solving. These are all life skills important to academic achievement and are reinforced by all activities in *4-H Science Discovery Series*.

## Community Service Service Learning Opportunities

Science can be a part of many service-learning projects and service should be a part of all 4-H projects as well as all Army activities. Find a project that is interesting to the youth and has value for the community.

Where does your garbage go? Contact a waste management or environmental related organization to find out about community service projects. (**Vol. 2, Appendix C, page 194**)

Good to the last drop...How can you help the community conserve and maintain water quality? (**Vol. 1, page 43**) Find out about a watershed project in your community. Be a part of a water conservation campaign.

## Life Skills

"Skills that help an individual to be successful in living a productive and satisfying life" are identified as Life Skills (Hendricks, 1996). Life Skills in this project include: problem solving; decision making; acquiring, analyzing, and using information; teamwork; managing resources; communication; enhancing learning skills; and logic and scientific method. Although each activity specifically targets only one life skill, youth have the opportunity to practice several.