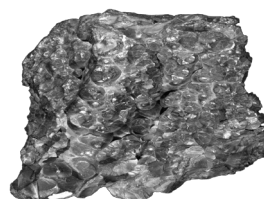


Geology

Helper's Guide



4-H Geology Project

Note for 4-H Members

Studying and learning about geology is fun for everyone. Since geologic features exist everywhere, you can study geology wherever you live. The Indiana 4-H *Geology* curriculum was written for youth who enjoy studying rocks, fossils, and minerals, especially for those who want to learn more. The first manual, Level 1, introduced you to rocks, fossils, and minerals. Level 2 continues this study in more detail. Level 3 introduces more advanced topics. The key to learning with any 4-H project is for you to enjoy your studies and to learn at your own pace. We hope this study is just the start of a lifetime enjoyment of geology. You can enhance your learning experience by using other resources from the Internet, school, or a local library. See the “Resources” section at the back of the manual for recommended publications.

To complete this project we suggest that you purchase the booklet *Let's Look at Rocks*. It has information about many of the topics introduced in this manual and color pictures that are very helpful with identification. The “Resources” section has information about where you can get the publication.

Note to Parents and Project Leaders

The 4-H Geology project offers many educational experiences, from collecting and identifying rocks to learning how the earth was formed. Parents can be a big help if they are involved with their children's learning, especially for younger 4-H members. If you can sit in on meetings and ask what they learned and what they did not understand, it will help your child have a much better experience. Kids will be much more excited to learn if they have parental support and interest in what they are doing. As they mature, youth should take on more responsibility. Parent involvement is still important with youth in grades 6-8. Show interest in what they are learning and doing. Your interest will reinforce what they learn at meetings and workshops. The geology experience will be more rewarding for your child at any age if you can take trips to collection sites; gem, mineral, and fossil shows; museums; and other special events. These field trips allow youth to speak with professionals, have hands-on experiences, and obtain specimens for their collections.

General information about the Indiana natural resource projects, including Frequently Asked Questions and exhibit pictures from the Indiana State Fair are available at: www.four-h.purdue.edu/natural_resources/

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When looking for rocks – did you think of what you can find at your local building and supply company? You can find marble, sand, gypsum, lava, granite, slate, and others. Take a look at the rock pillars at Menard’s, you might be surprised what you see!

Learning Goals

4-H Geology Level 1

- Begin to learn about rocks, minerals, and fossils
- Develop an understanding of, and an appreciation for, earth science
- Exhibit work to others in an engaging manner

4-H Geology Level 2

- Learn more about rocks, minerals, and fossils
- Learn about the importance of keeping records
- Develop an understanding of, and an appreciation for, earth science
- Exhibit work to others in an engaging manner

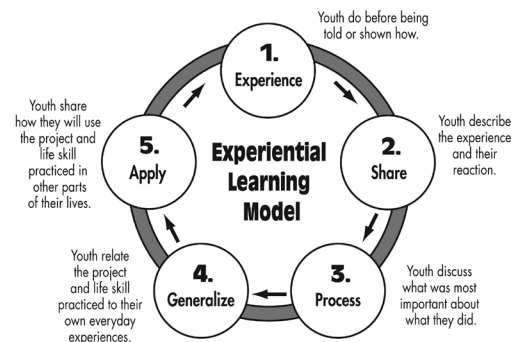
4-H Geology, Level 3

- Use resources beyond this manual for in-depth study of geology topics of interest
- Keep accurate records (field notes, journal)
- Expand understanding of and appreciation for earth science
- Educate others about geology through exhibits, presentations, action demonstrations, and mentor younger 4-H members

4-H Learning Using the Experiential Model

(Source: Excerpted and Adapted from “Experiential Learning in 4-H Project Experiences 4-H Volunteer Leaders’ Series,” University of Arkansas Cooperative Extension Service, Dr. Darlene Z. Baker. You may view the entire document at: <http://publications.uaex.edu/>. Search using the word – “experiential.”)

The Experiential Learning model is a way of teaching to help youth make the most of any activity that they experience. Experiential learning distinguishes 4-H activities from many other educational methods. Experiential learning is a process that allows youth to first learn by doing, before being told or shown how, and then process the experience. Activities are designed so youth experience a learning activity, share what they did, process what they did (discuss, analyze, reflect), generalize what they learned (to test the 4-H member’s comprehension and appreciation of the activity), and then think about how they can apply what they learned to other situations (generalize).



Pfeiffer, J.W., & Jones, J.E. "Reference Guide to Handbooks and Annuals" © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

The advantages of using the experiential learning process in group settings include:

- The adult can quickly assess the student’s knowledge of the subject.
- The student builds on past experience or knowledge.
- The adult is a coach rather than a teacher.
- The youth relate the experience to their own lives and experiences.
- Mentors may use a variety of methods to involve the youth in the experience.
- Youth with many different learning styles can be successful.
- Discussions can move from the concrete to the abstract and analytical, which is particularly beneficial for middle and high school students.
- Youth are stimulated to learn through discovery and to draw meaning from the experience.
- Youth can work together, share information, provide explanations, and evaluate themselves and others.
- Youth take responsibility for their own learning.

Evaluation Rubric

Evaluating youth learning using a simple rubric (such as the one shown) can help 4-H volunteer leaders assess the effectiveness of their teaching methodology and youth interest. Evaluate each step of the experiential model by indicating what you think the 4-H members learned in a particular activity (your best guess). Work on improving any low scores.

Step	Excellent	Average	Minimal
Experience			
Share			
Process			
Generalize			
Apply			

Youth Development Stages

Understanding the physical, mental, social, and emotional development of youth will help you when working with the 4-H members in your club. No two youth develop at the same rate and transitions are often gradual. Your teaching and involvement helps 4-H club members grow and mature and makes 4-H a rewarding and fulfilling experience.

Activities at 4-H club meetings are not always as successful as you, the volunteer leader, had planned. Sometimes youth talk among themselves rather than listening to you; sometimes no one comes to a planned field trip; or sometimes no one speaks up to answer your questions when you are trying to involve the youth in the discussion. If you are working with a broad age range, the activity may be too simple for the older youth and too difficult for the younger ones. This is very challenging for the 4-H leader. Giving the older 4-H members leadership opportunities can be very effective.

Youth of the same age can vary greatly in physical, mental, social, and emotional growth and interests. These differences are even more marked between age groups. Research has shown that there are some generalities that can help you understand how to plan activities for different age groups.

Early Elementary (Mini 4-H)

This is a very active age, so it is important to keep these children busy. They are concrete thinkers and need to understand what you want them to do and how to do it. They are generally more interested in making something than in completing a project (process is more interesting than product). Youth in this age group tend to seek adult approval and depend upon adults, although the opinions of their peers are beginning to be important. They do best in small groups with set rules and rituals. Competition is inappropriate for this age group.

Upper Elementary

This is also a very physically active age so hands-on activities work best. Youth in the upper elementary grades are still fairly concrete thinkers (things are black/white or right/wrong), but are beginning to think logically and symbolically. Because this age group has a strong need to feel accepted, it is best for an adult to evaluate each product, rather than hold competition among peers with only one winner. This age child prefers to know how much they have improved against past efforts and how to improve in the future.

These youth are beginning to identify with peers, but continue to value adult guidance. They are also beginning to discover the benefits of making other people happy, but more for the benefits to themselves rather than the benefit to others. They begin to take responsibility for their actions at this age and begin to develop an increased independence of thought, which may allow them to try new things. Letting this age group help in the decisions of the club helps them start to learn about leadership.

Middle School

Middle school youth are beginning to move to more abstract thinking. Justice and equality are important to this age. (Therefore, project judging may now be viewed in terms of what is fair, as well as being regarded as a reflection of self-worth.) They prefer to find their own solutions, rather than to be given solutions by adults. Try to provide supervision without interference. Independence of thoughts and actions begins to emerge. Avoid comparing middle school youth with each other's performance should be compared with past accomplishments.

Junior volunteer organizations often are popular with teens toward the end of this age group, particularly if there are opportunities for developing leadership.

High School

Most high school-aged teens know their abilities, interests, and talents. They tend to be very concerned with themselves and their peer group. While they can understand the feelings of others, they tend to be self-absorbed, particularly in the earlier years of high school. Relationship skills are usually fairly well developed. Getting a driver's license increases both independence and dating. Acceptance by members of the opposite sex is very important.

High school-aged youth begin to think about the future and make realistic plans. They enjoy career exploration and preparation. Their vocational goals influence the activities they select.

Projects requiring research and creativity give teens an opportunity to demonstrate how much they have learned and what they can accomplish. Teens set goals based on their personal needs and priorities – goals set by others are generally rejected.

As teens master abstract thinking, they may try new ideas in ways that confuse adults. Teens can generally initiate and complete tasks without supervision. A leader can help by arranging new experiences in areas of interest to teens but must be sure to allow them plenty of input. Assume the role of advisor/coach for independent workers, rather than teacher/lecturer. Club meetings, rituals, and uniforms do not generally appeal to this group. But many teens enjoy looking back on their achievements in 4-H and appreciate special recognition for leadership activities. By the time they graduate from high school and begin college or a career, youth feel they have reached the stage of full maturity and expect to be treated as such.

Some Final Thoughts

These guidelines only give a brief overview of child and youth development. They are intended as a resource to help you plan your activities as a volunteer leader. The publication, *Ages and Stages of Child and Youth Development*,* has more in-depth information and is available from your county Purdue Extension office.

You, as the club volunteer, are a valuable asset to your community and to the members of your club. The guidelines for the stages of child and youth development – in combination with your special skills and interests in youth – will help you plan and carry out a successful 4-H program and make a positive impact on the lives of young people.

* *Ages and Stages of Child and Youth Development, A Guide for 4-H Leaders, NCR 292*