

Arkansas 4-H Project Portfolio



Archeology

Arkansas 4-H Project Spotlight

What is 4-H?

Serving over 14,000 youth in all 75 counties in the state of Arkansas, 4-H youth development programs span topics from Agriculture to Zoology and everything in between. Stressing experiential learning (hands-on), youth learn to communicate, lead, and serve their communities in new and innovative ways.

4-H delivers these quality programs through a variety of ways including:

- Community Clubs
- Project / Special Interest Clubs
- In School Clubs
- School enrichment programs
- Afterschool programming

4-H Mission

The mission of the 4-H Youth Development program is to help children, youth, and families realize their full potential and to improve the quality of life for Arkansas children, youth, and families. The 4-H youth development program provides opportunities for youth to acquire knowledge, develop skills, form attitudes and practice behavior that will enable them to become self-directing, productive and contributing members of society.

4-H Pledge

I pledge:

*My Head to clearer thinking,
My Heart to greater Loyalty,
My Hands to Larger service, and
My Health to better living for my club, my community,
my country and my world.*



4-H Motto

The motto “To Make the Best Better” is intended to inspire young people to continue to learn and grow and to make their best efforts better through participating in educational experiences.

Affirmative Action

The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.

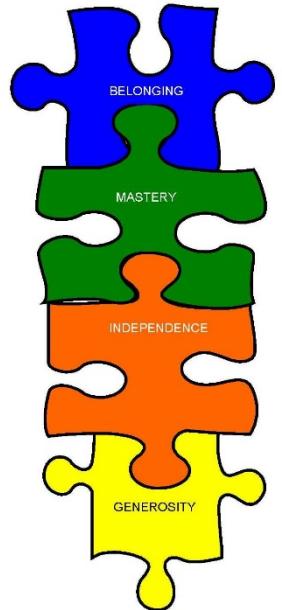
4-H Learning Strategies

Essential Elements of 4-H

The Essential Elements of 4-H Youth Development are basic principles upon which the 4-H Youth Development Program operates. Incorporating these elements enables the 4-H Program to focus on positive outcomes desired for youth; provide programs for all young people; view youth as central actors in their own development; and consider the development of the whole young person.

All youth need:

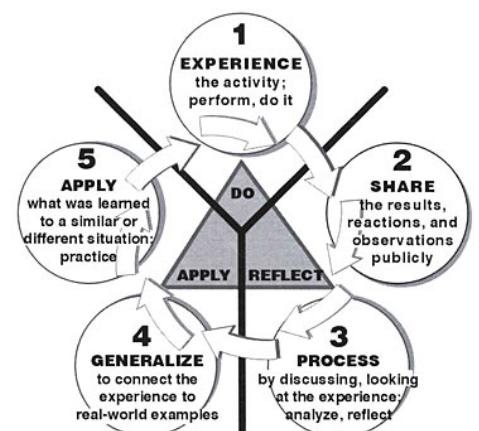
- Belonging: to know they are cared about by others in a inclusive and safe environment.
- Mastery: to feel and believe they are capable and successful.
- Independence: to know they are able to influence people and events.
- Generosity: to practice helping others through their own generosity.



Experiential Learning

The learn-by doing approach is the foundation of 4-H and allows young people to be engaged in their own experiences. Through the experiential learning model, young people have the opportunity to discover their own learning through a guided process, rather than being told what they should be learning and how they should feel about the experience.

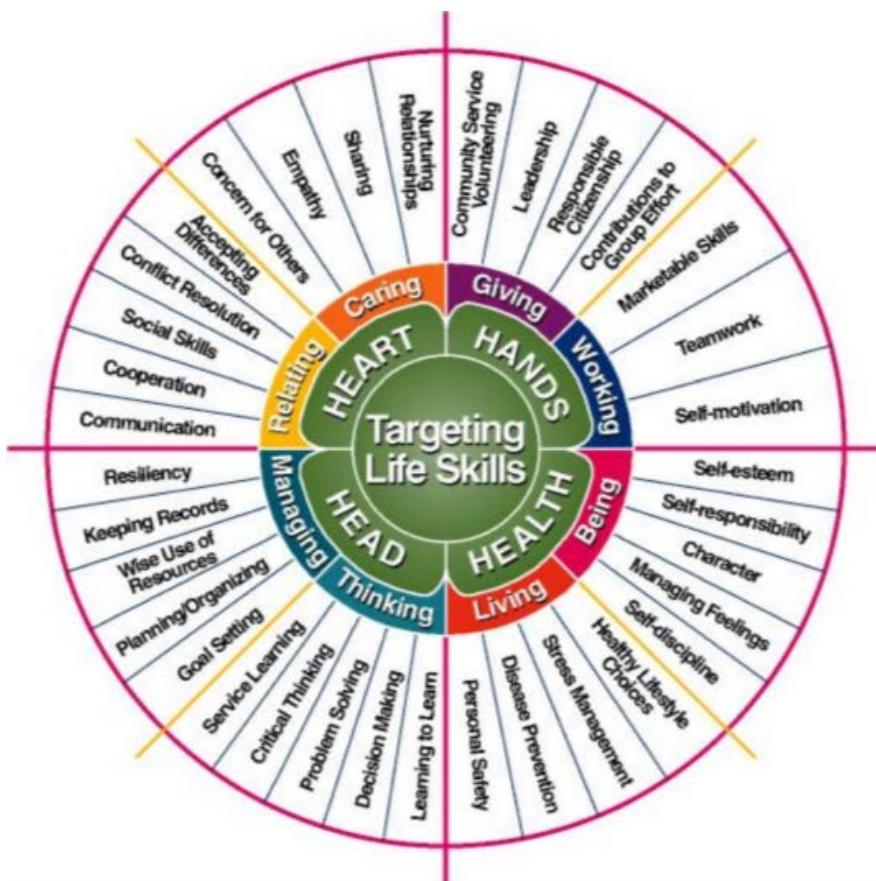
- Youth experience the activity—perform or do it. (Do)
- Youth share the experience by describing what happened. (Reflect)
- Youth process the experience to determine what was most important and identify common themes. (Reflect)
- Youth generalize from the experience and relate it to their daily lives. (Apply)
- Youth apply what they learned to a new situation. (Apply)



Targeting Life Skills

Life skills are a basic foundation that prepares young people for success in life. The goal is for every young person to possess the necessary life skills to succeed and lead a productive life.

- **HEAD:** Knowledge, Reasoning, and Creativity Competencies Thinking: using one's mind to form ideas and make decisions; to imagine, to examine carefully in the mind, to consider. Managing: using resources to accomplish a purpose.
- **HEART:** Personal/Social Competencies Relating: establishing a mutual or reciprocal connection between two people that is wholesome and meaningful to both. Caring: showing understanding, kindness, concern and affection for others.
- **HAND:** Vocational/Citizenship Competencies Giving: providing, supplying, or causing to happen (social responsibility). Working: accomplishing something or earning pay to support oneself through physical or mental effort.
- **HEALTH:** Health/Physical Competencies Living: Acting or behaving; the manner or style of daily life. Being: living one's life; pursuing one's basic nature; involved in personal development.



Iowa State University 4-H Targeting Life Skills Model

The 4-H Club Basics

What is a 4-H Club?

The club is the basic unit and foundation of 4-H. An organized club meets regularly (once a month, twice a month, weekly, etc.) under the guidance of two or more volunteer leaders, elects its own officers, plans its own program, and participates in a variety of activities. Clubs may choose to meet during the school year, only for the summer, or both.

Contact with your local County Extension if you would like to begin a formal 4-H club, and learn how to register youth with Arkansas 4-H.

Club Officers

One of the many benefits that formal 4-H clubs bring youth is Leadership. 4-H clubs have formal officers and run business meetings as part of the experience. Typical club officers include President, Vice President, Secretary, and Reporter. Officers lead meeting using basic parliamentary procedure.

Club Meetings

Club meetings should focus on three components:

1. Group Building- fun activities that add enthusiasm and enjoyment to the meeting.
2. Group Discussion – the formal business meeting, youth involved learn the basics of running meetings, parliamentary procedure, and following an agenda.
3. Group Learning – participation in activities that have hands-on, allowing the youth to engage in both learning and teaching roles.

Typical Club Outline

- Business
 - Roll Call
 - Pledges
 - Business
- Program
 - Project reports
 - Talent Event
 - Talks or reports
 - Special topic program
- Recreation
 - Game or Activity
 - Refreshments

Service Learning is a big part of every 4-H club experience.

Youth should select a Project that will benefit those in your Community, Country and World.

Arkansas 4-H Project Sheet



4-H

Making the Best Better

Head:

To think, to plan, and to reason:

- Record Keeping
- Goal Setting
- Problem Solving
- Decision Making

Heart:

To be kind, true, and sympathetic:

- Feeling
- Caring
- Sportsmanship
- Responsibility

Hands:

To be useful, helpful, and skillful.

- Working
- Community Service
- Giving
- Teamwork

Health:

To resist disease, enjoy life, and to make for efficiency:

- Personal Safety
- Self-esteem
- Character
- Responsibility



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Experience

~

Share

~

Generalize

~

Apply

Expand Your Experiences!

HEALTHY LIVING

- Identify ways to keep safe from weather when working outside.
- Hike at a local state park that focuses on history.
- Explore the similarities and differences in Foods from prehistory and today.

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

- Participate in a Lab Day with a State Park or Archeological Survey Office.
- Participate in a Field excavation with local archeologists.
- Explore hypothesis about local past cultures.

CITIZENSHIP AND LEADERSHIP

- Plan and implement an event to educate about 4-H.
- Be a role model and coach at meetings.
- Lead younger members to develop and achieve goals.
- Plan and implement a community service event.

Resources

Arkansas Archeological Survey
archeology.uark.edu/

Arkansas Archeological Society
<https://arkarch.org/>

Project Archeology
projectarchaeology.org/

National Park Service
www.nps.gov/archeology/

Arkansas State Parks
arkansasstateparks.com

⇒[Hampson Museum](#)
⇒[Parkin Museum](#)
⇒[Toltec Mounds](#)

Opportunities	Curriculum	4-H Record Keeping
4-H State O-Rama	Digging 4-H: Arkansas Archeology	4-H records allow members to develop record keeping and goal setting skills.
4-H Forestry and Wildlife Camp	Discover 4-H Clubs with Utah State University	Members record learning experiences and activities in their 4-H projects, leadership, and community service involvement, 4-H promotion, awards, and accomplishments.
4-H Day of Archeology	Intrigue of the Past—BLM lessons	
Archeo-Olympics	Ohio State Univ. Native American Artifacts: Arrowheads	
Volunteering with local Arkansas Archeological Survey offices		
Visit local museums to learn about local history		



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Digging 4-H

Archeology and Youth

Lessons

- **Why Archeology:** What archeology is, related sciences, and introduction to basic needs of humans.
- **Picture This:** Use of primary source photographs to interpret sites, difference between observation and inference.
- **Cookie Excavation:** Explore mapping and documenting of an archeological excavation in a tasty way.
- **Archeological Context:** Importance of context when examining artifacts to learn about culture.
- **Archeological Classification:** Learn how artifacts are sorted and classified in order to decipher past cultures.
- **Analyzing Artifacts:** Combine mapping, classification and interpretation to learn about past cultures.
- **Sneezy Science:** See how archeologists can use pollen to learn about past climate, food, and cultures.



Lesson Plan Symbols

The lesson plans in the Arkansas 4-H STEM Kits are designed in sections. Throughout the lesson plan you will find the following symbols to describe each section. They have been developed to help you easily identify the section of the lesson that you would like to focus on.

** Not all lessons will have every section.

	OVERVIEW & PURPOSE	Overview of what the lesson will be about.
	OBJECTIVES	Outlines specific learning goals for the lesson.
	MATERIALS NEEDED	List of items needed for the lesson.
	VERIFICATION	Questions to ask to determine learning goals have been met.
	ACTIVITY	Information on how to conduct the learning activity.
	EXTENSION	Options for extension activities to expand the lesson. These can also be used for higher level students to go further independently.
	MOBILE ACTIVITY	Activity where a mobile device will be needed.
	BOX RESOURCES	Information about resources found in Box shared folders.
	RESOURCES	Other resources that are available to reference or look up additional activities.
	VIDEO RESOURCES	Links to video resources about the lesson.

Why Archeology

Arkansas 4-H STEM Kit Curriculum

⌚ OVERVIEW & PURPOSE

Introduce participants to what archeologists do and why studying past cultures is important.

☰ OBJECTIVES

1. Participants can identify what an archeologist does and the tools used
2. Participants can identify types of sciences related to archeology
3. Participants can identify basic needs of humans.

≡ MATERIALS NEEDED

1. Worksheet – What is Archeology
2. Cards for Science Matching activity
3. Worksheet for Basic Human Needs

⌚ VERIFICATION

1. Can the participants recognize what an archeologist studies?
2. Can the participants determine how basic life needs are met in different cultures?
3. Can the participants use these concepts to answer a hypothesis (educated guess)?

📋 ACTIVITY

What is Archeology?

1. Distribute worksheet “What is Archeology” and have participants either draw or list answers to the four (4) topics:
 - a. Define the word archeology
 - b. Draw a picture of an archeologist and what kinds of tools they might use
 - c. Draw a picture of an archeological site
 - d. List the steps an archeologist might take when they study an archeological site.

What Science is that?

1. Have participants go over easily confused sciences using cards to match. Discuss the sciences of: paleontology, geology, archeology, history, & anthropology

Basic Needs

1. Distribute worksheet Basic Human Needs. Have participants identify how cultures meet their basic needs of Food, Shelter, and communication in Modern America, for non-native settlers and for a culture of their choice. Discuss the similarities and differences.

Reflect & Review

1. Describe what an archeologist does and why it is important.
2. How are basic needs of cultures similar? How are they different?
3. How does archeology relate to other sciences?

RESOURCES

- Smith, Shelley J., J. M. Moe, K. A. Letts and D.M. Paterson. 1993. *Intrigue of the Past: A teacher's Activity Guide* for fourth through seventh grades. Washington, D.C.: Bureau of Land Management, US Department of Interior.

What is Archeology?



1. Define the word archeology.

2. Draw a picture of an archeologist and what kind of tools they might use.

3. Draw a picture of an archeological site.

4. List the steps an archeologist might take when they study an archeological site.

Basic Human Needs



Shelter	Food	Communication	Americans Today
			Non Native Settlers
			Culture of your Choice

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<h1>Archeology</h1>	<p>The scientific study of past human culture and behavior through the material remains of mankind's past.</p>
<h1>Paleontology</h1>	<p>The study of fossils of long-extinct plants and animals</p>
<h1>Geology</h1>	<p>The science of the Earth. Scientists study the origin of the planet Earth, its history, its shape, the materials forming it, and the processes that are acting and have acted on it.</p>
<h1>History</h1>	<p>The discovery, collection, organization, and presentation of information about past events.</p>
<h1>Anthropology</h1>	<p>The science of the origins and development of human beings and their culture.</p>



Picture This!

Arkansas 4-H STEM Kit Curriculum

☰ OVERVIEW & PURPOSE

Introduce participants to how archeologists use historic photographs to interpret archeological sites and artifacts.

☰ OBJECTIVES

1. Participants gain an understanding of STEM applications
2. Participants can make unbiased observations.
3. Participants can make scientific interpretations based on observation

☰ MATERIALS NEEDED

1. Historical photographs of homesteads.
2. Worksheet – Picture This Data

☑ VERIFICATION

1. Can the participant make unbiased observations?
2. Can the participants apply concepts to a real-world situation?
3. Can the participants use this concept to answer a hypothesis (educated guess)?

📋 ACTIVITY

Make an Observation

1. Divide groups of 4 or 5 and give each group an image of a historic homestead. Have each group list the observations they can make about the image.
2. Using the observation, have the groups make educated inferences regarding the image.

Reflect & Review

1. Why is it important to make unbiased observations in science?
2. What can you learn from these observations?
3. What can influence inferences that are made about observations (Skew the View)?

📎 RESOURCES

- Smith, Shelley J., J. M. Moe, K. A. Letts and D.M. Paterson. 1993. *Intrigue of the Past: A teacher's Activity Guide for fourth through seventh grades*. Washington, D.C.: Bureau of Land Management, US Department of Interior.



Hollywood Plantation, Drew County Arkansas

Observing and Collecting Data

1. Make a list of objects in the photograph (observations).
2. How would you describe the people? Clothing? Expressions? Age? (observations)
3. What are the people doing? (Inference)
4. When was the picture taken (year, season, time of day)? Where was it taken? (inferences)
What is your evidence?

Analyzing and Interpreting the Data.

1. Why do you think the photo was taken?
2. What questions do you have about the photograph?
3. How could you get more information to answer your questions?

Observation vs. Inference





Observation vs.

Inference – Historic Homestead

Examine the Historic Homestead photograph and answer the following questions.

Observing and Collecting Data

1. Make a list of the objects in the photograph (observations).
2. How would you describe the people? Clothing? Expressions? Age? (observations)
3. What are the people doing? (inference)
4. When was the picture taken (year, time of day)? Where was it taken? (inferences)

Analyzing and Interpreting the Data

1. Why do you think the photo was taken?
2. What does the picture tell you about the past? What is your evidence?
3. What questions do you have about the photograph?



Cookie Excavation

An Arkansas 4-H STEM Lesson

💡 OVERVIEW & PURPOSE

Introduce youth to archeological practices and the importance of documenting excavations.

☰ OBJECTIVES

1. Youth will appreciate how difficult it is to excavate fragile artifacts
2. Youth will know why recording the location of artifacts is important to preserving archeological knowledge.

☰ MATERIALS NEEDED

1. Cookie Excavation Card
2. Toothpicks (2 per youth)
3. Soft cookie or granola bar (chocolate chip, raison, nut, etc.) - CAUTION for Allergies

☑ VERIFICATION

1. Can the participants recognize difference between artifacts (chips) and substrate (crumbs)?
2. Can you see every chocolate chip in the cookie prior to excavation?
3. Can the participants demonstrate how to map location of chips?
4. Can the participants tell why archeologists have to keep accurate records?

📋 ACTIVITY

Excavation of a Cookie

1. Provide youth with a cookie, worksheet and two toothpicks. Explain that this is the “archeological site” that they will be excavating.
2. Place Cookie on Grid A at top of worksheet. Have the youth draw the cookie on Grid B – mapping location of all visible artifacts (chocolate chips)
3. Begin the excavation of the cookie to expose other artifacts. Place the cookie crumbs in the back-dirt pile next to Grid A. Remind youth not to pick up or move the cookie as they excavate the chips out.
4. As new chips are exposed, map their location on Grid B map and carefully remove chip to the artifact pile.
5. Once cookies are completely excavated, count the artifacts (chips found). Did ever chip get mapped? Evaluate the map—were the chips clustered in one area? Were the chips spread evenly? Did some cookies have more chips than others?
6. Eat the back dirt and artifacts! (Something that archeologists are discouraged from doing in the field.)

Reflect & Review

1. Why is it important to carefully map artifacts on archeological sites? (excavation is destructive in that we cannot put things back exactly how they were found; location of artifacts is important)
2. What can you learn (infer) from artifact locations? (how things were used, importance of artifacts)
3. What other ways can archeologist an excavation site? (Photographs, soil colors, notes, detailed reports, etc.)

RESOURCES

- Museum of Ontario Archaeology: History in Your Hands. Archaeology for Kids: Excavate the Chocolate chips from a Cookie! Website Accessed on January 26, 2021.
<http://archaeologymuseum.ca/archaeology-for-kids-excavate-the-chocolate-chips-from-a-cookie/>

Cookie Excavation



	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Grid A: Place cookie here for excavation.

Do not move once it is in place.

Back Dirt Pile

	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Grid B: Draw your cookie with artifacts.

Collect Artifacts Here

Final number of artifacts: _____

Archeological Context

Arkansas 4-H STEM Kit Curriculum

OVERVIEW & PURPOSE

Introduce participants to the importance of the context of artifacts in their surroundings when learning about past cultures.

OBJECTIVES

1. Participants gain an understanding of STEM applications
2. Participants can explain why context is important when looking at artifacts.
3. Participants can explain what context is in relation to artifacts..

MATERIALS NEEDED

1. Index cards; Archeology Context cards, pencils

VERIFICATION

1. Can the participant tell what the relation of an artifact to other objects can tell an archeologist?
2. Can the participants apply concepts to a real-world situation?
3. Can the participants use this concept to answer a hypothesis (educated guess)?

ACTIVITY

Pre-Game Questions:

1. List ten things in your bedroom that would tell about you. What do they tell us about you?
 - a. Could we **infer** if you were a boy or girl? Do you share a room? What your interests are?
2. If your items were found in a different location would they mean the same thing? If we found them in the woods? In a store?

Context Game:

1. Divide into groups of 4 or 5 and give each group a 5-6 cards. Assign each group a Number
2. Each group will label their cards with their group number.
3. Select an Archeological Context card to be assigned a room
4. Have group members draw (without words) an artifact that is distinctive to that room. Each card should have one (1) artifact.
5. Exchange cards, with facilitator randomly “Looting” or removing one or more artifacts.
6. Groups will write down their deduction of what the room is and continue passing and looting cards until last group is left with only one artifact to determine the room.

Reflect & Review

1. *Why is it important to leave artifacts in place on an archeological site?*
2. *Does an artifact “tell” the same story if it is in a shoebox than if it is in the field?*
3. *What will your “artifacts” tell us about you?*

RESOURCES

- Smith, Shelley J., J. M. Moe, K. A. Letts and D.M. Paterson. 1993. *Intrigue of the Past: A teacher’s Activity Guide for fourth through seventh grades.* Washington, D.C.: Bureau of Land Management, US Department of Interior.

Archeological Context



Archeological Context



Archeological Context



Archeological Context



Archeological Context



Archeological Context



Archeological Context



Archeological Context



Archeological Context



Archeological Context



Bathroom

Living Room

Dining Room

Kitchen

Bedroom

Office

Garage

Shed

Play Room

Laundry Room

Archeological Classification

Arkansas 4-H STEM Kit Curriculum

⌚ OVERVIEW & PURPOSE

Introduce participants to how archeologists classify objects based on attributes to answer research questions and decipher past cultures and communities.

☰ OBJECTIVES

1. Participants gain an understanding of STEM applications
2. Participants can classify objects based on multiple attributes.
3. Participants can use classifications to prove or disprove a hypothesis.

☰ MATERIALS NEEDED

1. “Doohickey kit” for each group, with each kit containing two dozen familiar objects with various attributes (string, rocks, paper clips, cloth etc). Each kit must be identical.
2. Worksheet -- “Artifacts from Hollywood”

☑ VERIFICATION

1. Can the participant classify objects by at least three attributes?
2. Can the participants apply concepts to a real-world situation?
3. Can the participants use this concept to answer a hypothesis (educated guess)?

📋 ACTIVITY

Doohickey Kit

1. Divide groups of 4 or 5 and give each group a “doohickey kit.” Have each group organize the objects into categories, using one or more schemes.
2. Present a hypothesis and have the groups categorize objects to answer the question.

Hollywood Plantation Artifacts -- 1830's Plantation in Drew County Arkansas

1. Using pictures of artifacts from a homestead, categorize artifacts to determine:
 - a. Who lived there
 - b. When did they live there

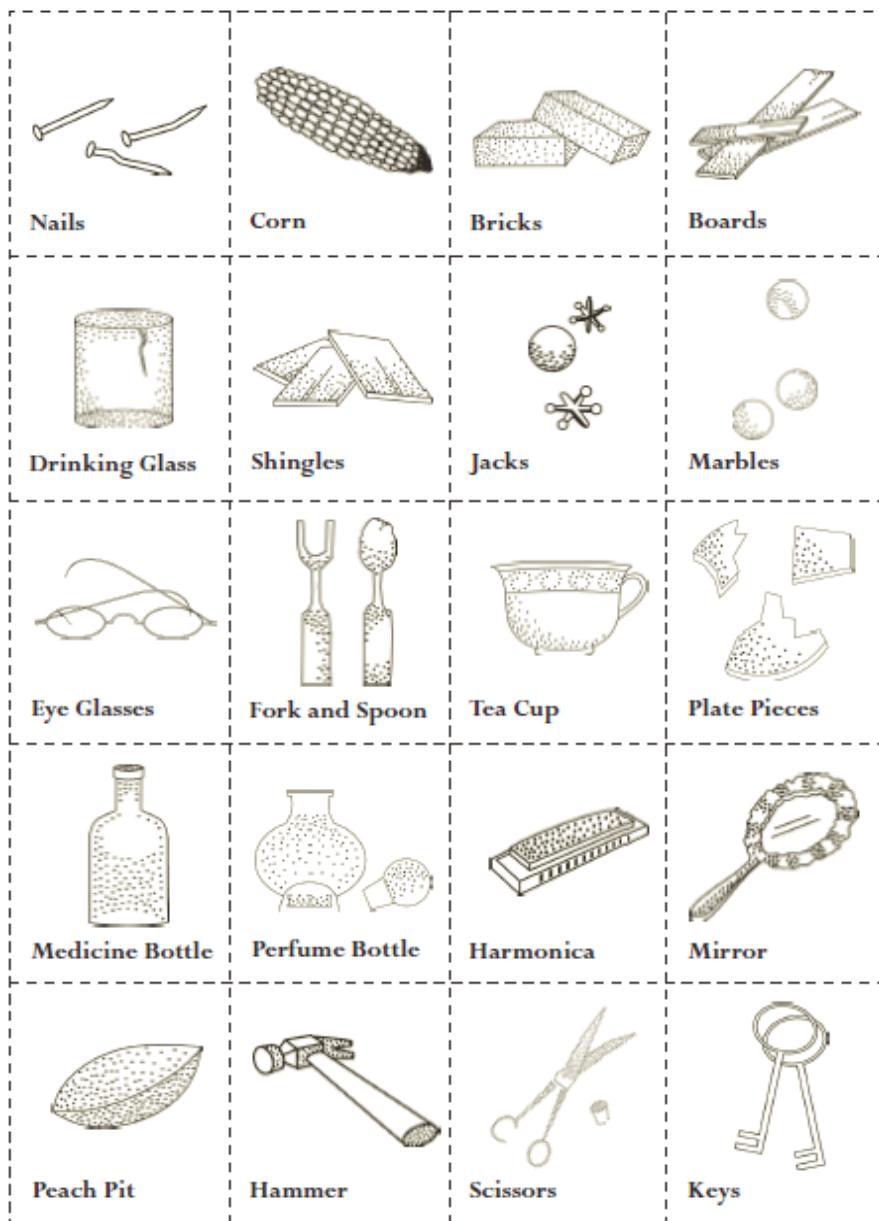
Reflect & Review

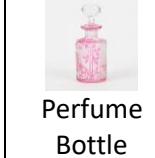
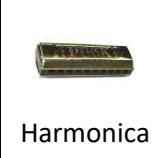
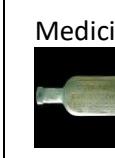
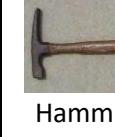
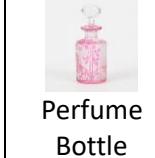
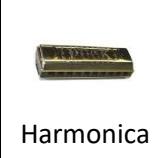
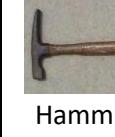
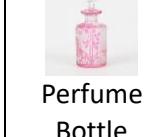
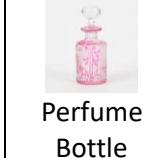
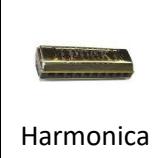
1. Why is it important to document artifacts?
2. What can you learn about our past from things that are left behind?
3. What will your “artifacts” tell us about you?

📎 RESOURCES

- Smith, Shelley J., J. M. Moe, K. A. Letts and D.M. Paterson. 1993. *Intrigue of the Past: A teacher's Activity Guide for fourth through seventh grades*. Washington, D.C.: Bureau of Land Management, US Department of Interior.

Artifacts from Hollywood Plantation



							
Nails	Corn	Brick	Board	Glass	Shingle	Jacks	Marbles
	Fork and spoon	Tea cup	Plate pieces	Medicine			
eye glasses					Perfume Bottle	Harmonica	hand mirror
					Fork and spoon	Tea cup	Plate pieces
Peach pit	Hammer	Scissors	Key	eye glasses			
							
Nails	Corn	Brick	Board	Glass	Shingle	Jacks	Marbles
	Fork and spoon	Tea cup	Plate pieces	Medicine			
eye glasses					Perfume Bottle	Harmonica	hand mirror
							
Peach pit	Hammer	Scissors	Key	Medicine	Perfume Bottle	Harmonica	hand mirror
							
Nails	Corn	Brick	Board	Glass	Shingle	Jacks	Marbles
	Fork and spoon	Tea cup	Plate pieces	Medicine			
eye glasses					Perfume Bottle	Harmonica	hand mirror
							
Peach pit	Hammer	Scissors	Key	Peach pit	Hammer	Scissors	Key
							
Nails	Corn	Brick	Board	Glass	Shingle	Jacks	Marbles

Analyzing Artifacts

Arkansas 4-H STEM Kit Curriculum

OVERVIEW & PURPOSE

Introduce participants to how archeologists can determine pre-historic cultures based on artifacts.

OBJECTIVES

1. Participants can map artifact location accurately.
2. Participants can develop hypotheses based on artifact assemblages.
3. Participants determine infer pre-historical culture based on artifacts.

MATERIALS NEEDED

1. Analyzing Artifact Cards. Lay these cards out on Grid.
2. Worksheet – Analyzing artifacts
3. Worksheet displayed on Cultural Conditions

VERIFICATION

1. Can the participants recognize what prehistoric people ate based on artifacts?
2. Can the participants determine social structure based on artifacts?
3. Can the participants use these concepts to answer a hypothesis (educated guess)?

ACTIVITY

Analyzing Artifacts of Societies

1. Distribute bags with artifacts sorted by types of prehistorical cultures. Have groups analyze and identify items found in the bags and deduct what they can about the people that lived at the site they have.
2. After 10-15 minutes have groups discuss their culture:
 - a. Is there evidence of what food they ate?
 - b. Is there evidence of economic activity?
 - c. What kind of social structure do you think they had?
 - d. What kind of dwellings do you think they lived in?

Groups for this Activity are:

- **Hunter-Gatherer** – bones, bit of animal pelt, leather, animal drawings on hide or rock, jewelry of bones, spear points, dried roots, baskets, etc.
- **Farming** – kernels of corn, wool cloth, statues of gods, iron or stone tools, etc.
- **Fishing** – Jewelry of shell, lines, sinkers, nets, etc.
- **Trading** – old coins, combinations of items that might have been traded, tally stones, etc.
- **Herders** – evidence of fences, animal skins, clubs, etc.

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Analyzing Artifacts – Mapping and interpretation

1. Have artifacts set up in three sections, laid out on a 15 x 15 grid that is labeled a-o on the x-axis and 1-15 on the y-axis.
 - a. Area 1: Rock with sharp edge, animal skull, spear point, bone
 - b. Area 2: Corn, Mussel Shells, burnt rock, Mano & Metate
 - c. Area 3: Shells and cordage, human skull, bone
2. Have participants map the location of each artifact on graph paper and discuss the questions below as part of a reflection and review process.

Reflect & Review

1. Describe what you found in your area and what type of activities happened.
2. What do you think the people ate from each of the areas?
3. Why is context important when determining the function of artifacts?

RESOURCES

- Smith, Shelley J., J. M. Moe, K. A. Letts and D.M. Paterson. 1993. *Intrigue of the Past: A teacher's Activity Guide for fourth through seventh grades*. Washington, D.C.: Bureau of Land Management, US Department of Interior.

Cordage (shoe)



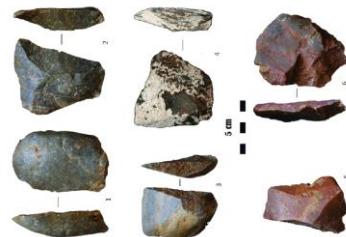
Mano & Metate



Fire cracked rocks



Chipped Lithic (chipped rocks)



Mussel shells



Deer Skull



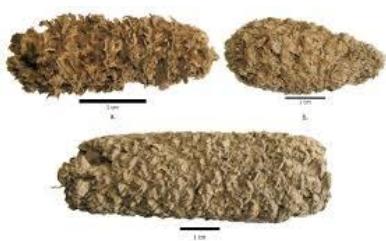
Mussel shells with drilled hole



Assorted Bones



Corn remains



Dalton point



Analyzing Artifacts



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Trade beads



Human skull



Stone discoidal (chunkey stone)



Bones with cut marks



Stone earspools



Shells with cordage



Effigy pot – Parkin, AR



Mussel shells



Pictures on deer hide



Net plummet (weight)



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Sneezy Science!

Arkansas 4-H STEM Kit Curriculum

⌚ OVERVIEW & PURPOSE

Introduce participants to how archeologists use pollen to identify climate conditions, foods, and human impact on the environment.

☰ OBJECTIVES

1. Participants can identify six (6) pollen grains and the climatic condition in which they grow.
2. Participants can infer prehistoric climate and plant use by interpreting pollen samples.
3. Participants determine how climate impacted a prehistoric village through time through graphs of pollen frequency.

☰ MATERIALS NEEDED

1. Handout on magnified pollen grains.
2. Worksheet – Sneezy Science

✓ VERIFICATION

1. Can the participants recognize types of pollen?
2. Can the participants determine climate conditions based on pollen?
3. Can the participants use this concept to answer a hypothesis (educated guess)?

📋 ACTIVITY

Observation of pollen

1. Share images of pollen without labels and have group guess what they are seeing. Reveal that it is pollen, and discuss what they know about the plants pictured. Discuss what Native Americans could use the plant for.
 - a. Pine: native to Arkansas, found in upland forests. Uses: Fiber, building materials, firewood, and inner bark could be eaten.
 - b. Oak: native to Arkansas, found in bottomland and upland forests. Can withstand dry conditions. Uses: Acorns for food, ground into flour, fiber and building material, fire wood.
 - c. Cattail: found in wet, marshy areas. Uses: Edible roots, flowers, stalks, and pollen. Leaves used for fiber to make rope, mats, bedding, etc.
 - d. Goosefoot: often considered a weed, grows on disturbed sites, forest edges and fields. Uses: Seeds ate straight or ground into flour, young leaves edible. Taste goosefoot for yourself by eating modern quinoa.

- e. Sunflower: Dry open spaces such as prairies, plains, and meadows, often cultivated. Uses include: food and oil (seeds), dyes, building material and fiber, and ritual.
- f. Maize: domesticated crop, requires warmth and moisture. Cobs used for food, grain eaten fresh or ground to flour, pollen could be used in rituals.

2. Using the Comparing Pollen Sheet, have participants determine what kind of activities were occurring on the “sites” based on the pollen present in samples. Is there evidence of agricultural practices? (presence of domesticated plants will show signs of agriculture)

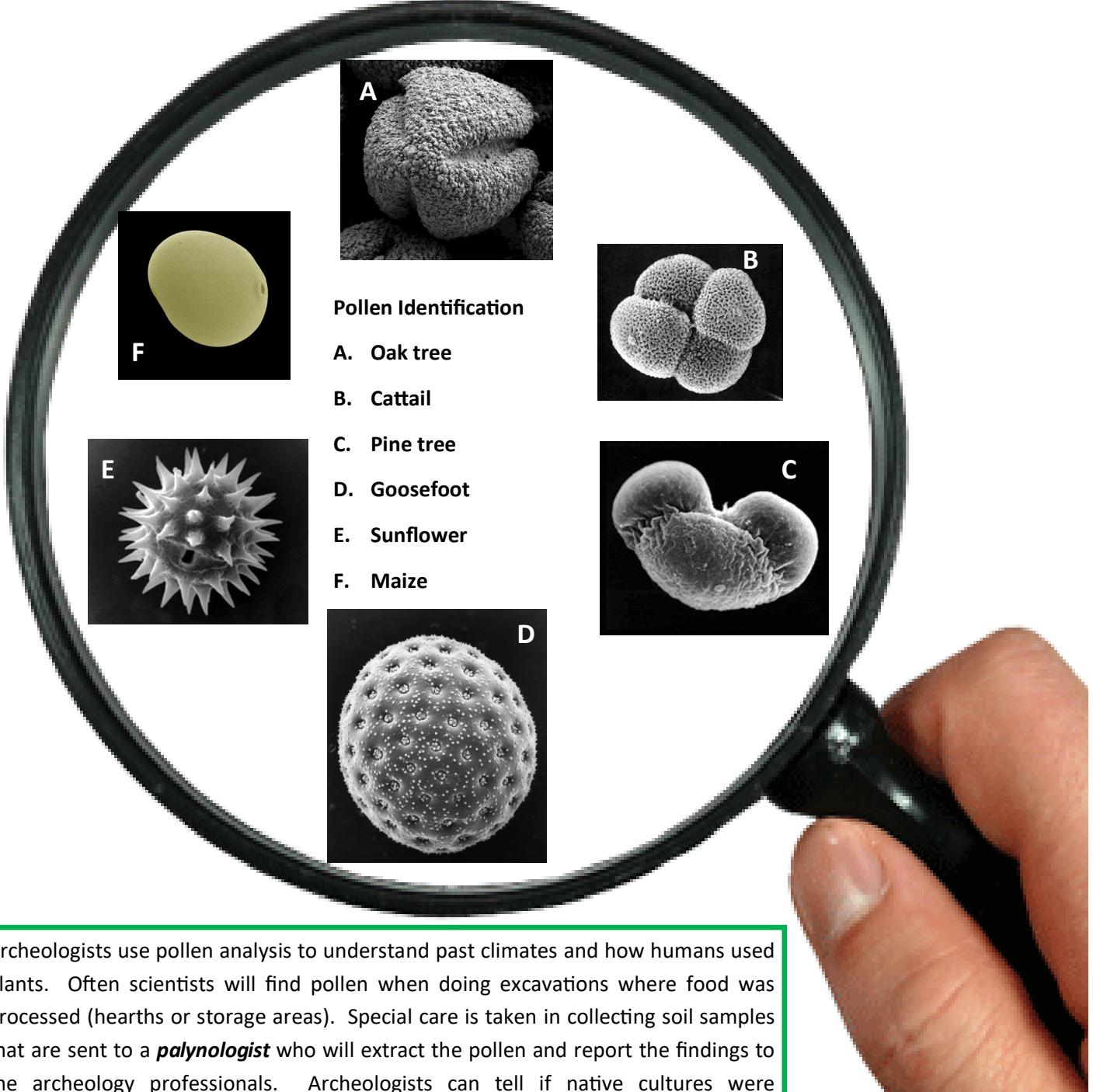
Reflect & Review

1. Why is it important to carefully collect pollen from archeological sites? (prevent contamination of sample from modern pollen)
2. What can you learn (infer) from pollen samples? (climate, plant use, ecology of area)
3. How can we use pollen current society? (allergy season/research, detective work to solve crimes)

RESOURCES

- Smith, Shelley J., J. M. Moe, K. A. Letts and D.M. Paterson. 1993. *Intrigue of the Past: A teacher's Activity Guide* for fourth through seventh grades. Washington, D.C.: Bureau of Land Management, US Department of Interior.

Sneezy Science



Pollen Identification

- A. Oak tree
- B. Cattail
- C. Pine tree
- D. Goosefoot
- E. Sunflower
- F. Maize

Archeologists use pollen analysis to understand past climates and how humans used plants. Often scientists will find pollen when doing excavations where food was processed (hearts or storage areas). Special care is taken in collecting soil samples that are sent to a **palynologist** who will extract the pollen and report the findings to the archeology professionals. Archeologists can tell if native cultures were cultivating foods, gathering native plants, or a combination of both styles. The quantity of pollen can also indicate climate conditions that existed prehistorically.

Sneezy Science...

Comparing Pollen

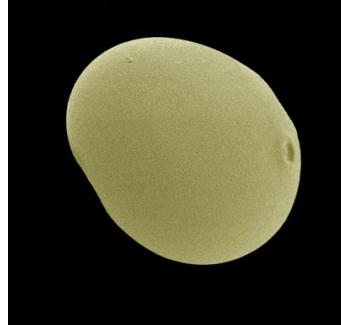


Sample from a 1,000 year old hearth, deposited by human activity.

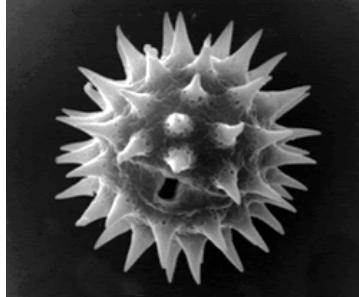
1. Name of plant



2. Name of plant

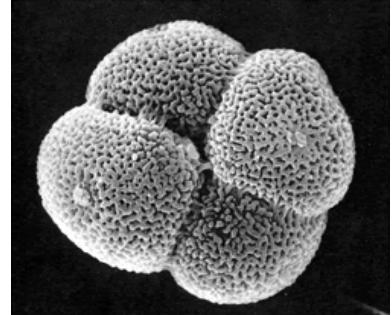


4. Name of plant

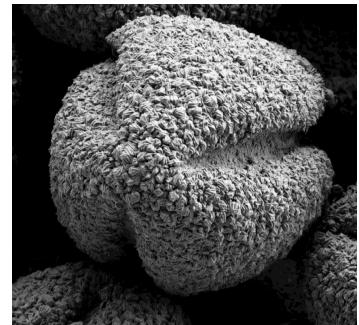


Sample from outside site, also 1,000 year old, deposited by natural processes.

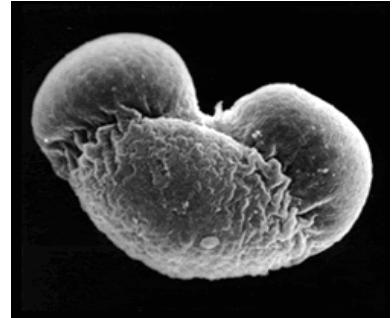
4. Name of plant



5. Name of plant



6. Name of plant



Archeology Project

Year

Name



Objectives for All Projects	<ul style="list-style-type: none">• Apply all 4-H training and experience in choosing and preparing for a vocation• Practice leadership skills and roles in 4-H and the community• Take part in community affairs and demonstrate citizenship responsibility.• Develop integrity, sportsmanship and decision-making capability, and public speaking skills through experiential learning.
Objectives for this Archeology Project	<ul style="list-style-type: none">• To develop an understanding for the importance of Context in archeology• To understand the relationship between archeology, anthropology, geology, history, and paleontology.• To understand the basic procedures when conducting an archeological investigation.• To be aware of local, state, and federal laws that protect archeological sites.• To explore careers related to archeology.• To be able to explain why protecting our cultural heritage is important.

I worked toward the following objectives this year: (list)

List talks and illustrated presentations related to the projects reported by title.

Arkansas 4-H Project Planning and Reflection

What have you learned in this project?

List what you have learned as a result of participation in the project along with skills you have acquired related to the project.

Leadership Experiences in this project

4-H Leadership

Other Leadership

Citizenship Experiences in this project

4-H Citizenship

Other Citizenship

Arkansas 4-H Project Planning and Reflection

Participation in the 4-H Archeology Project

Include the amount of project work (number of items, number of times, etc.) along with related experiences such as tours, public speaking, research, career exploration, etc.)

EXAMPLE

Activity – These are examples – add or delete categories as needed	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Culture													
Number of cultures explored													
Languages explored													
Maps created													
Museums visited													
Parks visited													
Archeological investigations													
Hours spent in field with archeologist													
Hours spent in lab with archeologist													
Artifacts processed													
Learning Experiences													
Books/Articles read													
Tours													
Judging Contest Participation													
Project -related employment (hours)													
Number of presentations provided													



Arkansas Social Studies K-4 & Arkansas 4-H Project Areas - Archeology

Why Archeology	Picture This!	Cookie Excavation	Archeological Context	Archeological Artifacts	Analyzing Artifacts	Sneezy Science	
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Civics/Government

Civic and Political Institutions

- C.1.*.1: Familiarity with Founding Documents
- C.1.*.2: Roles and Responsibilities of Leaders
- C.1.*.3: Functions of Government

Participation and Deliberation

- C.2.*.1: State and National Symbols
- C.2.*.2: Procedures and etiquette for Pledge of Allegiance and flags
- C.2.*.3: What it means to be a good citizen and citizens' rights and responsibilities.
- C.2.*.4: Skills and listening, consensus building and deliberative processes when voting and acting on civic issues.

Processes, Rules, and Laws

- C.3.*.1: Needs and roles of rules and consequences.
- C.3.*.2: How rules and laws help improve communities.
- C.3.*.3: How communities work to accomplish tasks and responsibilities and the impact on local - global issues.

Economics

Economic Decision Making

- E.4.*.1: Wants vs Needs and concept of Scarcity
- E.4.*.2: Cost and Benefits.

Exchange and Markets

- E.5.*.1: Human Resources
- E.5.*.2: Production and Consumption
- E.5.*.3: Markets and Community

Growth and Stability

- E.6.*.1: Money and exchange
- E.6.*.2: Savings of money
- E.6.*.3: Public Goods and Services
- E.6.*.4: Economic Factors

For more information on Academic Standards visit the

Arkansas Department of Elementary and Secondary Education at:

<http://dese.ade.arkansas.gov/divisions/learning-services/curriculum-and-instruction>

Arkansas 4-H Projects information can be found at:

<https://4h.uaex.edu/youth/projects/default.aspx>



Arkansas Social Studies K-4 & Arkansas 4-H Project Areas - GENERAL

Why Archeology	Picture This!	Cookie Excavation	Archeological Context	Archeological Classification	Analyzing Artifacts	Sneaky Science	
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Global Economy

- E.7.*.1: Economic Interdependence: trade between states, countries:
- E.7.*.2: Economic interdependence: goods from AR and impact on world

Geography

Geographic representations

- G.8.*.1: Spatial view of world-basic use of maps
- G.8.*.2: Using geographic representation regarding physical and human characteristics of locations.
- G.8.*.3: Explain and create maps

Human-Environment Interaction

- G.9.*.1: Humans impact on environment
- G.9.*.2: Cultural characteristics in communities
- G.9.*.3: Weather and Climate impact on Humans

Spatial Patterns and Movement

- G.10.*.1: Natural Resources and human needs
- G.10.*.2: Trade and movement of people and goods
- G.10.*.3: Diverse groups & settlement in Arkansas & World

Global Interactions

- G.11.*.1: Changing spatial patterns: Connections to community to world
- G.11.*.2: Human and Natural disasters and humans

History

Chronology, Change over time, and Contextualization

- H.12.*.1: Change of chronological time (terms)
- H.12.*.2: Using timelines
- H.12.*.3: Comparing current times to past cultures
- H.12.*.4: Contextualization: How historical event and figures impact history
- H.12.*.5: National holidays, symbols, and places

Perspective, Historical Evidence, and Causation

- H.13.*.1: Perspective: Point of view on history
- H.13.*.2: Different groups during same period
- H.13.*.3: Records, Artifacts and evidence used
- H.13.*.4: Types of sources (Primary and Secondary)
- H.13.*.5: Formulate questions regarding history
- H.13.*.6: Examine changes in terms of Cause and Effect

4-H Common Measures
Digging 4-H Archeology Program – Youth Survey
An Arkansas STEM Project



Dear Participant:

You have been given this survey because you have participated in a 4-H program or project and 4-H would like to learn about you and your experiences in 4-H.

Your answers are important and they will be kept private. But, if you don't want to fill out the survey, you don't have to or if there is a question you don't want to answer, you can leave it blank.

There are no right or wrong answers, so please answer all questions honestly.

Thank you for your help!

Archeological Science Engagement

- 1. After participating in the Digging 4-H: Archeology Program, I understand why it is important to preserve and protect archeological resources.**
 Yes
 Sort of
 No
- 2. After participating in the Digging 4-H: Archeology Program, I understand how I can protect archeological resources.**
 Yes
 Sort of
 No
- 3. After participating in the Digging 4-H: Archeology Program, I am more interested in science and agriculture.**
 Yes
 Sort of
 No
- 4. After participating in the Digging 4-H: Archeology Program, I will take action to protect archeological resources in my community.**
 Yes
 Sort of
 No

About You

- 5. How old are you?**
 years old
- 6. What grade are you in? *If it is summer break, which grade will you be starting in the fall?***
 grade
- 7. Which of the following best describes your gender?**
 Male (boy)
 Female (girl)
 I don't want to say
- 8. Which of the following best describes your race and ethnicity? *You can select more than one answer***
 American Indian or Alaskan Native
 Asian
 Black or African American
 Hispanic or Latino
 Native Hawaiian/Other Pacific Islander
 White or Caucasian
 More than one race
 I don't know

Survey continues on the next page.

9. Which of the following best describes the primary place where you live?

- Farm
- Rural (non-farm residence, pop. <10,000)
- Town or City (pop. 10,000-50,000)
- Suburb of a city (pop. >50,000)
- City (pop. >50,000)