The Archaeology of Early Agriculture in Kansas

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YOUR FINAL PERFORMANCE
Promoting a Garden
In this unit you will understand that:

- archaeologists investigate the ways people lived in the past
- evidence of the past is worth protecting
- ideas from the past can inform decisions today

In this unit you will answer:

- how do archaeologists investigate the past?
- why is protecting archaeological resources important?
- how can ideas from early agriculture help us create a healthy lifestyle today?

Student Journal
Page 1 – “Getting Started.” Complete the activity.

Kansas archaeology volunteers screen for artifacts.

A student volunteer uncovers an artifact.
Mystery of the Ancient Seeds

Imagine that archaeologists found these seeds in a place where people lived. Archaeologists are scientists who study people in the past. These seeds can tell archaeologists something about how people lived long ago.

- How do you think archaeologists found the seeds?
- How did the seeds survive so long?
- What can archaeologists learn from these seeds about people?

In this unit you will discover the answers to this mystery!
What Is Archaeology?
Several thousand years ago on the plains of central Kansas, a woman picked a seed from a wild plant. She dug a hole, placed the seed in the hole, and covered it up. And then she waited. Would the seed she planted grow? How can we know today if she was successful? Archaeology is one way to know.

Student Journal
Page 2 - “What Is Archaeology?” Complete the activity using the images on pages 3-4.
The Job of an Archaeologist

Imagine that you can step into the boots of an archaeologist. What kind of work would you do? There are five phases or steps in the process of uncovering the story of an archaeological site.

**Phase 1: Finding Where People Lived**
Archaeologists must first find places where people lived in the past. Sites are found by doing a site survey. A site survey is walking and looking for artifacts or features on top of the ground. Archaeologists look in eroded areas, in the dirt that animals kick out of their burrows, and in the cut banks of streams. Sometimes sites are found when farmers plow their fields or when land is cleared for construction.

**Phase 2: Keeping Track**
When archaeologists find a site, they fill out a site record form. This form describes where the site is located, its size, what they find, and how old it is. They file the form at the Kansas Historical Society or a university, so that other archaeologists can use the information in ongoing research.

**Phase 3: Uncovering History**
Sometimes archaeologists excavate a site. Excavation is systematically removing dirt from the site so that artifacts and features can be observed and recorded. Archaeologists create different kinds of maps showing what they find and where they find it. They describe, measure, and photograph everything in the excavation. During excavation, archaeologists collect samples such as animal bones and burned seeds, and artifacts such as pottery pieces, arrow points, and other tools. It is important that archaeologists study artifacts and features in the place where they find them. They are trained to understand what an artifact can reveal in the place where it is found.
Phase 4: Studying and Concluding How People Lived
After excavation archaeologists take the artifacts, maps, and photographs to a laboratory. There they clean, sort, and catalog the artifacts. They study everything that they collect. Their conclusions tell the story of past cultures. This kind of research can take months and sometimes years to complete.

Phase 5: Communicating Research Results
The last step is to write a final site report. The report tells in detail how the research was done. It tells what archaeologists conclude. The conclusions tell the story of how past peoples lived. Completing a site report may take years. The final report helps other archaeologists who do similar research. They also can be read by anyone interested in learning about archaeology.

Student Journal
Page 3-4 - “The Job of an Archaeologist.” Complete the worksheet.
Studying the Minneapolis Site

The narrative below summarizes information from a real archaeological site near Minneapolis, Kansas. This illustrates the phases of an archaeological investigation.

Archaeologists discovered this site on the Solomon River near present-day Minneapolis, Kansas. They observed 24 low mounds of earth on the prairie. What could they possibly be?

Archaeologists wondered if they were connected to people long ago. They observed that this would have been a perfect place to live. It is close to a river with trees along its banks. People would have had water to drink and to wash and wood to burn and to build shelters. Soil along the river shows that floodwater had left behind good soil for growing food. They decided to take a closer look by doing a survey.
The survey showed archaeologists that the mounds were the remains of very old earthlodges. They wrote this information on a site record form. They inferred that the site was 700 years old, dating prior to the time when there were named tribes in the plains. To infer is to conclude something based on evidence.

Archaeologists from the Nebraska State Historical Society decided to excavate the Minneapolis site. They wanted to answer the question: Are the archaeological remains along the Solomon River the same as other prehistoric cultures in the region? In 1934 they excavated three of the mounds. They found many artifacts, including tree logs, pottery, stone tools, bone tools, corncobs, and animal bones. They uncovered features, such as postholes, clumps of clay, storage pits, and fire hearths.
At the end of the excavation, all of the artifacts, maps, and photographs from the Minneapolis site excavation were taken to the lab in Lincoln, Nebraska.

Archaeologists spent many months studying the artifacts and feature records so that they could answer their research question: Are the archaeological remains along the Solomon River the same as other prehistoric cultures in the region?

At the end of his research, Waldo R. Wedel, an archaeologist from Newton, Kansas, who worked on the excavation, wrote a report called, “Minneapolis 1: A Prehistoric Village Site in Ottawa County, Kansas.”

Dr. Mary J. Adair has studied many Kansas and Central Plains archaeological sites and artifacts. She is becoming an expert on prehistoric agriculture in Kansas and provided much of the information for this unit. Prehistory is the time period before written records. Dr. Adair manages archaeological collections at the University of Kansas. She helps researchers use the collections for their studies of how people once lived in this region of North America.

Archaeologists are scientists. Scientists ask questions to guide their research. Dr. Adair has a special interest in learning how people used plants and in how farming began on the Central Plains of North America. These are some questions she asks:

- What is the difference between a wild plant and the same plant grown in a garden?
- How did plants grown in a garden affect diet?
- How did the knowledge of agriculture spread from one group to another?
The Beginning of Farming in Kansas
Kansas was founded as an agricultural state. Its most important crops are wheat, corn, sunflowers, grain sorghum, and soybeans. These crops feed people in Kansas, the United States, and all over the world. Kansas crops are also used for things like cooking oil and animal feed. But farming began long ago. In this section you will learn when and how farming began in Kansas.

Big Game Hunters 10,000 BCE
Sometimes people think that Kansas history begins with the arrival of Europeans. But Kansas history begins at least 12,000 years ago (10,000 BCE). The early history of Kansas is the history of American Indians. These first people came here from Asia following big game animals. They were hunting mammoth and giant bison for food. Even after these big game animals became extinct, the nomadic hunting and gathering way of life continued until about 500 BCE. Let’s think about what people ate and how they found food 5,000 years ago (3000 BCE).

Hunter-Gatherers 3000 BCE
How did people get food before they began to grow it? People hunted animals and gathered food, such as wild seeds, fruits, nuts, and roots. Archaeologists call these people hunter-gatherers. Hunter-gatherers moved with the seasons to find food. Imagine the life of hunter-gatherers. Every day they had to search for edible plants and animals. It was very hard work. How did they survive during the winter or when there was a drought? Prehistoric man would have had to look for plants and animals that they had avoided eating before because they tasted bad or were not very nutritious. What if animals were too far away or not in the area at all? The people had to move and find animals to eat. If they could not find food, they may have suffered and died.
The First Farmers 2,500 Years Ago (500 BCE)

American Indians were the first farmers in Kansas. About 2,500 years ago humans began to grow gardens as another way to get food. How is it possible today to learn about these people? They did not write down their stories, so there are no written records. This is the job of archaeologists to investigate. Archaeologists look for evidence in seeds and in farming artifacts and features.

Studying seeds can tell archaeologists:
- what people ate
- if the food came from wild plants
- if the food came from plants that were grown in a garden

Seeds are often found in the hearths where people cooked. They are found in storage pits where food was stored. They are found in places where people threw away their garbage.

Archaeologists collect soil samples from hearths, pits, and garbage dumps. They separate the seeds from the dirt by flotation. Flotation is the process of “washing” soil samples in a barrel of circulating water.

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Student Journal
Page 5-6 – “Finding Food 5,000 Years Ago.” Complete the activity.

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<table>
<thead>
<tr>
<th>Protohistoric Period</th>
<th>Village Gardening Period</th>
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<tr>
<td>Woodland Period</td>
<td>Hunting, gathering, and gardening</td>
</tr>
<tr>
<td>3000 BCE</td>
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<td>1 CE</td>
<td>1000 CE</td>
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<tr>
<td>Present</td>
<td></td>
</tr>
</tbody>
</table>
The Mystery of Wild Seeds and Garden Seeds

Remember the mystery seeds at the beginning of the unit? Examine the picture of the marshelder seeds. Note some of the seeds are a different size. Some of the seeds are wild and some were planted and cared for by people. Can you guess which were wild and which people planted?

How do archaeologists know if the seed is from a wild plant or from a plant grown in a garden? Marshelder was a wild plant. People gathered its seeds for food thousands of years ago. Archaeologists noticed a change in the marshelder seeds in sites dating from about 2,500 years ago (500 BCE). The seeds in the top row are from the wild marshelder. The seeds on the bottom are from marshelder planted by humans. When humans planted, cared for, and harvested marshelder seeds, it caused the genetics of the plant to change. Genetics are the biochemical basis of heredity and variation of organisms. One change is that seeds became bigger. Also, the seeds on a single plant ripened at the same time. This meant a more productive harvest for less effort. When a wild seed is changed because humans plant and care for it, scientists say that the new seed is domesticated. Think how remarkable it is that a seed can change simply because humans planted and cared for it.
Farming Artifacts and Features

Sometimes ancient seeds don’t survive in Kansas soil. As a result archaeologists also look for farming tools and features in sites. This helps them decide whether the people were hunter-gatherers or farmers.

A digging stick was used to dig holes to plant seeds. It was made from a bison tibia (lower leg bone) and a wooden handle.

An antler rake was used to scrape the earth in the garden and keep out weeds. The antler is a solid bony branched structure found on the heads of deer. It was attached to a wooden handle.

A hoe was used to loosen the soil before planting. It was made from a bison scapula (shoulder blade) or chipped stone and a wooden handle.

A stone mano and grinding slab were used to grind seeds into flour to be made into cakes or bread. These implements are a smaller, rounded hand-held stone (mano) and a flat or indented base rock (grinding slab).

Ceramic pots were used to store and to cook seeds and other raw food. Ceramics are objects made of clay and heated in a fire to make them hard.
Archaeologists are scientists, and like all scientists they conduct investigations. Their scientific inquiries often begin with a question. Your investigation questions are:

1. When did farming begin?
2. How did farming begin?
3. How did farming change the way people lived?

A wooden post leaves a dark stain in the earth when it rots away. This dark stain shows where a post once stood. The post could have been part of a shelter or also a rack for drying foods, like pumpkin strips or meat.

A storage pit was used to store seeds for later eating or planting. Storage pits were dug into the ground and are one type of archaeological feature.

Show what you have learned

1. Where did people get food before there were gardens or farms?
2. How did seeds become domesticated?
3. Answer Section One question: How do archaeologists investigate the past?

Student Journal

Your Turn to Investigate!

Archaeologists are scientists, and like all scientists they conduct investigations. Their scientific inquiries often begin with a question. Your investigation questions are:

1. When did farming begin?
2. How did farming begin?
3. How did farming change the way people lived?

Pages 7-20 - “Directions for Collecting Data” Your Work as an Archaeologist: The Technical Report
Your Civic Responsibility

In this section you will discuss the importance of protecting archaeological resources and write a letter to a newspaper editor expressing your opinion. Your question is: Why is protecting archaeological resources important?

Preserving Pieces of the Past

Seeds.
Seeds preserved for thousands of years.
Seeds found by archaeologists.
Seeds that unlock the mystery of farming 2,500 years ago.

Tools.
Digging stick, mano and grinding slab, antler rake, and hoe.
Tools found by archaeologists.
Tools used to grow and prepare food.

Ceramics.
Little pieces of pottery.
Potsherds found by archaeologists.
They tell the story of seeds stored and cooked.

Storage pits.
First small, then bigger, and then more of them.
Storage pits found by archaeologists.
They tell the story of seeds gathered and stored.

House sites.
One house, a few houses, many houses.
Archaeologists find evidence of communities getting larger over time.
Farming provides more food for more people.

Seeds, ceramics, storage pits, house sites.
History preserved for thousands of years.
Preservation, discovery, and research
Unlock the mystery of the past.

What is the poem’s message?
Protecting Archaeological Resources

Every day in America, more roads are built and more land is covered with houses and shopping malls. Whenever land is dug up, artifacts and sites from the past might be lost forever. Evidence is also lost when people pick up artifacts and take them home. When people dig in a site without recording important information as archaeologists are trained to do, they destroy what can be learned. The history of that site is lost forever. It is a **civic responsibility** for people to leave archaeological sites and artifacts just as they find them and to report their finds. Civic responsibility is caring and being involved in your community.

As a result of being a good citizen, archaeological evidence is preserved. Archaeologists can then do their job. They never stop asking questions about the past. Every question they investigate leads to more questions. For example Dr. Adair has many more questions that she wants to answer:

- How far west in Kansas were people able to grow crops?
- What other native plants did prehistoric people grow?
- How important were crops to the diet and general health of people?

Because artifacts are preserved at universities, Dr. Adair can return to the artifacts in storage to research new questions.

One way to practice your civic responsibility is to report what you find. You should contact the Kansas Historical Society’s Cultural Resources Division, 6425 SW 6th Avenue, Topeka KS 66615-1099, 785-272-8681, ext. 240.

(Above) Dr. Adair measures a charred corn cob from an excavation site.

(Left) Archaeologists examine a site as construction threatens to destroy it.
What Else You Can Do
If you want to learn more about archaeology, you can be a volunteer at the Kansas Historical Society’s Kansas Archeology Training Program, held each June. You will work alongside professional archaeologists as you excavate sites and clean and catalog artifacts in the lab. You must be at least 10 years of age. Anyone between the ages of 10 and 18 must be with an adult. For more information visit kshs.org/katp. Other agencies also have similar programs. For example, visit the U.S. Forest Service’s Passport in Time Program at passportintime.com and Earthwatch at earthwatch.org.

A volunteer clears fill material in an excavation unit.

Show what you have learned

1. Often people think that the only thing archaeologists do is find cool stuff. Is this true? Explain.
2. Should someone who is not a trained archaeologist dig to find artifacts? Explain.
3. What part of history can be lost if an untrained person digs for artifacts and keeps them?
4. If you find an artifact or a site, what should you do? Explain.
5. Why might protecting archaeological resources be your civic responsibility?
6. Answer Section Two question: Why is protecting archaeological resources important?
Learning from the Archaeological Past: A Pathway to a Healthy Lifestyle

In this section you will think critically about lifestyle choices related to food. Your question is: How can ideas from early agriculture help us create a healthy lifestyle today?

**Your Agricultural Heritage**

As a Kansan, the history of agriculture belongs to you. American Indians had been farmers for hundreds of years before other people came to this land called the New World. Indians gave them seeds of plants that grew well in this climate. American Indian knowledge of farming helped some pioneers to get a better start in this new land.

Over time the size of farms grew. Pioneer farms included a family garden and fields of grain and corn. Farming also became a way to earn a living. Today it takes more food to feed a growing population in Kansas and around the world. Farming has become a big business.

Today many families no longer grow their food in family gardens. Instead big growers in California, Florida, Mexico, and many countries in South America fill grocery stores with the fruits and vegetables that we need. We often don’t think about who grows our food or where it comes from. We have lost an important connection to the land and to our agricultural heritage. Your agricultural heritage is a way of living related to growing food that has been passed down through generations. How might you reconnect with this heritage?

*A combine harvests a wheat crop.*
Keeping our Agricultural Heritage Alive
It is spring. The sun is shining. The earth is warming. You hold the tiny seeds of a lettuce plant in your hand. You dig a hole and place the seeds inside. You cover the hole and give the seeds some water. One day the lettuce plants poke out of the ground. You continue to water the plants to help them grow. Finally the lettuce is big enough to eat. You cut a leaf from a plant and pop it in your mouth. It tastes sweet and fresh. You cut enough lettuce to make a big, yummy salad. Could we go back to growing some of our own food perhaps in a family garden, a community garden, or a school garden? How might a garden contribute to a healthy lifestyle?

Lettuce plants flourish in a garden.

Carl Leon Barnes and the Three Sisters
Meet Carl Leon Barnes. Mr. Barnes’ spirit name is White Eagle. He was born in Tyrone, Oklahoma, in 1928. At the age of 14 he learned from his grandfather that he was part Cherokee. At the age of 21 this knowledge led him to his life’s work. Since 1942 he and his wife, Karen, also known as Earth Dove, have preserved more than 500 kinds of ancient corn. Some people call Mr. Barnes “The Keeper of the Sacred Seed.” He has many stories to share about ancient corn and “The Three Sisters.” (continued next page)
Corn was first grown in Mexico. Corn seeds first arrived in what is now Kansas around 1,700 years ago. Corn is important to American Indians everywhere because it is a gift from their Creator. In some of their creation stories, the Creator made the grasses first, including corn. The animals were created second and needed the grasses to live. Corn then is a source of life.

There are hundreds of different kinds of ancient corn in the colors of the rainbow and in black and white. Mr. Barnes believes that the various colors can heal and give energy to different parts of the body. For example, red corn affects the feet and legs; yellow corn, the stomach; green corn, the heart; blue corn, the throat; and purple corn, the head.
Early American Indian farmers planted corn, bean, and squash seeds in the same hole. Together the plants supported each other. The corn provided a structure on which the beans could climb. The beans helped the corn stalk stand strong in the wind. At the bottom of the corn stalk, the leaves of the squash vines shaded the soil, so that it held water longer. Planting corn, beans, and squash together came to be known as “The Three Sisters.”

Today Mr. Barnes provides ancient corn seeds and teaches others to plant “The Three Sisters.” He says, “There are three types of poverty—mental, physical, and spiritual. When you turn to the soil and raise corn, all of these poverties disappear.” What do you think Mr. Barnes means?

Mr. Barnes is a great teacher. Listen to his words and discuss his message with your classmates. “We must plant as many different types and varieties of seeds as we can in each separate bioregion of the country. [A bioregion is a natural area defined by its plants, animals, geography, and climate.] The soil, the insects, the birds, and nature in general will tell us which ones [seeds] are best for our place; we must listen, look, and we will learn. We then will find our living relationship with the nature of the place we live in. This will help bring a balance, because it is truth. Working with seeds, we give protection and value to those relationships and give ourselves life and a gift to future generations.”

Ecoregions data developed by the U.S. Environmental Protection Agency. Map provided by the Kansas Data Access and Support Center (DASC).
Living a Healthy Lifestyle

We constantly hear that people today are overweight, exercise less, and are not as healthy. As a result, the U.S. Congress has said that schools must create a wellness plan. What is your school’s wellness plan? How might growing a school garden support this plan?

Fresh from the Garden

Diana Hershberger, Rosemary Menninger, and Wendy Pearson are Topeka gardeners who contribute their time to help people create community and school gardens. Some of the food they raise is donated to local food banks. They want to share their ideas for healthy eating and encourage others to try similar projects. Read and discuss their ideas.

“The poor quality of mass-produced food, chemical additives in processed foods, genetic modification of crops, and pollution caused by large-scale agriculture are all reasons to grown your own food.”

– Wendy

Today we need healthy food just like early farmers did 2,500 years ago. One way to ensure a good food supply is to grow our own. This food becomes ingredients for healthy meals. At home, at school, or in a community garden, you could grow beans, peas, lettuce, cucumbers, tomatoes, peppers, corn, squash, broccoli, kale, and carrots. They contain vitamins A, C, E, K, B6, B1 and minerals, such as calcium, iron, zinc, and potassium. Together they make you strong and healthy. They protect your body from illnesses, such as cancer, heart attacks, flu, or colds. With food that you grow, you can be creative and make attractive meals and snacks for yourself, your family, and friends.

When you pay attention to the taste, smell, and appearance of what you are eating, you are likely to eat more slowly, eat less, and enjoy your food more. Fresh produce from a garden often has more taste than fruits and vegetables purchased at a store. More importantly, fresh produce keeps most of its minerals and vitamins as it travels the tiny distance from your garden to your plate to your stomach.

“Greens add lots of nutrition to the diet. They come in many varieties and are easy to grow and include in many dishes. Yellow vegetables have good nutritional value and are better fresh from the garden. Root crops can be surprising and tasty.”

– Rosemary
“A sense of community, including sharing stories and traditions, may have been true in prehistoric gardening as it is in today’s community gardens. Community gardens bring neighbors together and provide fresh and nutritious food to people who might otherwise go hungry.”

– Diana

Planting, bending, shoveling, digging, cutting, picking, hoeing, watering—these are gardening verbs that mean your body is on the move. There are many benefits to exercise. It clears your mind, makes you feel happy, creates a healthy heart, and makes you strong. And for all your effort, you get to eat good food too.

A garden takes empty space and turns it back to nature. Plants bring color to the landscape—red peppers, orange carrots, yellow corn, purple eggplant, and green peas. Orange and black-spotted lady bugs, green preying mantises, yellow bees, black wasps, and song birds of different kinds move into the garden. Plant flowers that attract butterflies, and you have nature galore right in your own backyard, community, or school.

Nothing of value is won without hard work—football games, first prize in 4-H, straight As in school. Gardens take time, attention, and hard work, but when you sit down to a super fresh meal, there can be a great sense of satisfaction. To learn more about Diana Hershberger and the school gardens she helps create, visit topekagarden.webs.com.
Building Safe, Healthy, and Green Environments

Now it’s time to gather information on growing a garden. There are many kinds of gardens:
- a pizza garden with tomatoes, peppers, onions, garlic, and broccoli
- a salad garden with lettuce, spinach, chard, radishes, onions, and peas
- “The Three Sisters” garden of corn, beans, and squash, all planted in the same hole together
- a container garden with vegetables planted in small pots near your back door or on your patio.

Garden ingredients are:
- soil in a plot of land or in a container
- sun
- plant food
- seeds
- water
- plant food
- a willingness to nurture plants

That’s all you need! Give it a try! Your teacher has additional information on gardening, such as the best time to plant and how to construct a garden. Use the information that you gather from this exercise to develop your final performance.

Show what you have learned

1. What does a healthy lifestyle mean to you?
2. Before creating a garden, think about the obstructions that might stop you and how you can overcome them. An obstacle is somebody or something that prevents progress.
3. Make a list of people who could support you in creating your garden.
4. How does gardening honor your agricultural heritage?
5. Answer the Section Three question: How can ideas from early agriculture help us create a healthy lifestyle today?
Now you can apply what you have learned by solving a real problem that can be presented to a real audience. The strategy that you will use is called RAFT. It allows you to choose an interesting form for presenting your information. RAFT is an acronym for the following words.

R stands for Role:
What is your role as the creator of this project? You are a student who has used archaeology to learn about early agriculture in Kansas. You have learned about the importance of protecting archaeological resources. You have also learned how the past can guide us to solve problems today. Now you will create a plan to encourage others to plant a garden.

A stands for Audience:
Who will be seeing your product? Your teacher may have a specific audience in mind, but you may choose to develop your project for one of these groups: your school, your neighborhood, your community, a day care center, a senior citizen home, a church, or your family.

F stands for Format:
What is the best way to present your information? Your persuasive presentation should communicate the importance of growing a garden to support a healthy lifestyle. You may choose to present your project in any form that you and your teacher agree upon. Some options are: PowerPoint, poster, video, booklet, or podcast.

T stands for Topic:
What is this product about? Through this unit you have come to understand that farming and growing food is part of your agricultural heritage. The early American Indian farmers are our first role models. Like them, you can grow some of your own food. Planting, tending, and harvesting a garden and eating garden-fresh food helps you lead a healthy lifestyle. Your goal is to develop a product that will encourage your audience to plant a garden.

Your final product must include:
- **Who** will participate in the creation of the garden? Who will benefit from the garden?
- **What** will be the responsibility for each person or groups of persons?
- **When** will the garden be created?
- **Where** will the garden be created?
- **Why** will the garden be created?
- **How** will the garden be created?
- Include what you have learned from archaeology about the earliest farmers.
- Explain how gardens honor our agricultural heritage.