

CENTRAL QUESTION:

What do the artifacts from Range Creek tell us about the people who lived there?

TIME: 165 minutes

OVERVIEW:

- **SECTION 1: WARM-UP**(20 minutes)
How do we know humans lived here?
- **SECTION 2: SITE SURVEY** (30 minutes)
What kinds of sites are found at Range Creek?
- **SECTION 3: GATHER** (45 minutes)
What kinds of artifacts were found in Range Creek?
- **SECTION 4: ANALYZE** (30 minutes)
What can these artifacts tell us about the people who used them?
- **SECTION 5: INTERPRET** (20 minutes)
How do artifacts tell us about the lives of indigenous people?
- **SECTION 6: COMMUNICATE** (20 minutes)
Compare their daily lives to your own. What was daily life like for the people of Range Creek?

DISTANCE LEARNING STRATEGIES:

- Activate collaboration and critical thinking by putting students into research groups to work on this together.
- Link to electronic Research Assistant Notebook for students to record their notes digitally.
- Use the chat feature in your preferred video conferencing system to allow students to ask questions, share ideas, and reason together.
- Use breakout rooms for small group discussions.

MATERIALS:

- One computer per two students
- One computer with the ability to broadcast material onto a screen visible by the entire class
- Printed or digital *Research Assistant Notebooks* for students to record notes
- White board or other surface for teacher to use while facilitating class discussions
- Additional resources found on the “Support Materials” page:
 - *Student Learning Assessment Tool*
 - *Student Rubric for Presenting Arguments*
 - *Student Rubric for Assessing Learning Outcomes*

Standards Alignment:

Utah Social Studies Standard

- **U.S. I Standard 1.1:** Students will analyze evidence, including artifacts and other primary sources to make evidence-based inferences about life among several American Indian nations prior to European exploration of the Americas.

NGSS Science and Engineering Practices

- **Obtaining, Evaluating, and Communicating Information** - Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing and/or through oral presentations.

ELA Standards

- **Writing Standard 1:** Write arguments to support claims with clear reasons and relevant evidence.
- **Language Standard 4:** Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies.

GETTING STARTED

This investigation provides support for teaching the content standards, along with the nature of science/how science is done, developing claims, working with evidence, and using reasoning skills. (**Hint:** Review the *Student Learning Assessment Tool* for opportunities to assess learning with your students.)

Before class...

- Review this instructional guide and determine your student learning goals, which sections you want students to work on for each class period you are using the investigation, and the steps which your students will need guided instruction.
- Review the following recommended strategies for optimizing student learning outcomes.
 - Working in pairs ensures that every student has the opportunity to share their ideas. As students progress through the investigation, you may want to combine pairs of students into small groups to provide more practice sharing and responding to the ideas of their peers.
 - Build a shared vocabulary for the learning tasks by identifying key vocabulary beforehand and encouraging students to use these words often. Model correct usage, if needed. (*See Range Creek Glossary Guide*)
 - **Key Vocabulary:** artifact, archaeologist, indigenous, permit, excavation, features, Fremont, middens, inhabitants, erosion, granary, petroglyph, pictographs, prehistoric, historic, occupants, organic, chert, lithic
 - Think about places you can activate prior knowledge by prompting students to relate new concepts to a familiar context.
 - Think about how to integrate the *Research Quest* investigations with other curriculum-aligned activities.
 - Create and engage student interest in the investigation by expressing your enthusiasm and/or describing your personal interest in this investigation. You may also want to emphasize that students will be working with authentic materials on research questions that scientists actually address in their work.
 - Introduce students to sentence stems that reinforce flexible thinking and help students verbalize their thought processes:
 - “I see...”
 - “I think...”
 - “I wonder...”

Set Up...

- Make copies of the Research Assistant Notebook (RAN) for each of your students, or use the editable PDF or Google Doc versions with your desired digital classroom platform (ie. Google Classroom, Canvas, etc).
- Navigate to www.researchquest.org and login using the email address and password you used to create your *Research Quest* account. Then, click on the “My Account” tab at the far right of the navigation bar. You will find your **Student Access Code**.
- Have your unique Student Access Code and URL link [www.researchquest.org/student/] ready for students. **It is important you have students use this particular URL and access code to get into the investigations for FERPA & COPPA.**

In class...

- Introduce the daily objectives and provide a brief overview of the investigation to the class. These can be drawn from the section overviews.
- Provide each student with a copy of the *Research Assistant Notebook* (RAN).
- Arrange students into pairs, one pair per computer. Instruct them to navigate to the URL [www.researchquest.org/student/] and enter your unique Student Access Code.
- Students will find themselves on a landing page with the option to go into one of three investigation modules. They should choose, “Archaeology.” Then, they should click on the investigation “What do the artifacts from Range Creek tell us about the people who lived there?”
- Once logged in, students will be on the introduction page for this investigation. They can read the overview and start at your direction.

SECTION 1: WARM-UP HOW DO WE KNOW HUMANS LIVED HERE?

(10-20 minutes)

OVERVIEW

Students examine how archaeologists collect data through the excavation process.

ASSESSMENT

In this section, the instructor may find it useful to focus on the following critical thinking skills, defined in more detail in the *Student Learning Assessment Tool* located in the **Support Materials** page for this investigation.

- **Observation:** Make detailed, sense-based observations that reflect the key activities of excavation.

	STUDENT ACTION	TIPS FOR SUPPORTING CRITICAL THINKING
PRE-REQUISITE (5 minutes)	<ul style="list-style-type: none">• Review the “Permit Required” page. Then agree to the terms of archaeological research. <p><i>RESEARCH ASSISTANT NOTEBOOK (RAN): page 1</i></p>	<ul style="list-style-type: none">• Direct students’ attention to the acknowledgment & permit required overview. These are two important considerations for students to understand before beginning their work. Our aim is to remind students there are many ways to learn about people who lived before us and their descendants who are living now - not just through the science of archaeology. And, relative to artifacts, it is important that students understand the shared responsibility we all have when finding and studying those artifacts.• Note: All archaeological researchers must first obtain a permit to conduct research in a given site.
STEP 1 (5 minutes)	<ul style="list-style-type: none">• Watch the video on Step 1 of the investigation. (3:43 min.)	<ul style="list-style-type: none">• Direct students’ attention to the following before beginning the video: <i>In this video you’ll be introduced to NHMU Educator Aidan Bailey and NHMU Archaeologist Dr. Shannon Boomgarden. They will talk about archaeology and why it’s important for understanding our past. They’ll also set-up your first activity to understand more about the processes archaeologists use to do their work including how they know humans lived in the areas they study.</i>
STEP 2 (20 minutes)	<ul style="list-style-type: none">• Use the wheel-shaped interactive to navigate through each step of the excavation process. Examine photos and play the audio for additional reading support. <p><i>RESEARCH ASSISTANT NOTEBOOK (RAN): page 1</i></p>	<ul style="list-style-type: none">• Encourage students to explore each step of the excavation process. Help them, as needed, to understand the importance of detailed note-taking at all stages in the process.• Consider putting students into eight groups (one for each excavation step), then have them present their step to the rest of the class. [ELA listening & speaking]

SECTION 2: SITE SURVEY WHAT KINDS OF SITES ARE FOUND AT RANGE CREEK? (30 minutes)

OVERVIEW

Students develop their research question and examine the sites at Range Creek. Then, students will evaluate their research question and make revisions, as needed.

ASSESSMENT

- **Observation:** Make observations of each site. Look for details that can help provide useful information for answering their research question.
- **Evaluation:** Students will use their site observations to evaluate their research question, making revisions to their question, as needed.

STUDENT ACTION

TIPS FOR SUPPORTING CRITICAL THINKING

STEP 3
(5 minutes)

- Watch the video on Step 3 of the investigation. (4:06 min.)

- Direct students' attention to the following before beginning the video:

In this video you'll be introduced to NHMU archaeologist Corinne Springer, the Range Creek Field Station Manager. She will give background about Range Creek and the different sites found there.

STEP 4
(10 minutes)

- The overarching question for this investigation is, "What do the artifacts at Range Creek tell us about the people who lived there?" To help you prepare to research this, first, think about something you are wondering about the Fremont people. Record it in your RAN.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 1

- Having students develop their own question will support them in answering the main research question.
- Encourage students to consider their own interests and curiosity based on what they have learned about the Fremont people who lived at Range Creek. Ask, "What do you wonder about?"
- We recommend that students work with a partner, or in a small group as research teams to develop a research question. Consider modeling how to ask questions, suggest questions that start with 'why', 'how', 'what'.

STEP 5
(20-30 minutes)

- Use the buttons at the top of the page to explore the different sites found at Range Creek. Read the text, look at the pictures, if needed, click the audio button to listen to the text read aloud. With your research team consider which site will help you answer your research question.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 2

- Support students in examining the sites, as needed, to make connections between the type of information they can learn from the site features and artifacts.
- You can choose to have students explore all the sites individually or assign groups with each group learning about a different site then sharing with the other groups. (Jigsaw method).

STEP 6
(5 minutes)

- Watch the video on Step 6 of the investigation. (3:31 min.)

- Direct students' attention to the following before beginning the video:

In this video, you'll hear from Corinne again as she models how she thinks about her own research question once she's had a chance to examine possible study sites.

STEP 7
(5-10 minutes)

- Discuss and evaluate your research question.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 1

- This is a good place to assess learning. Listening to student reasoning allows teachers to check for understanding and assess student reasoning. This can help inform support they need from you.

SECTION 3: GATHER WHAT KINDS OF ARTIFACTS WERE FOUND IN RANGE CREEK? (45 minutes)

OVERVIEW

Students will examine artifacts to make detailed observations. They'll use these observations to determine the material type, object type, and the function of their selected artifacts.

ASSESSMENT

- **Observation:** Collect evidence through detailed observations and note-taking.
- **Evaluation:** Use artifact observations to determine material type and possible object type.
- **Connections:** Interpret expert information to make connections between the artifacts and the activities they were used for.

STUDENT ACTION

TIPS FOR SUPPORTING CRITICAL THINKING

STEP 8 (5 minutes)

- Watch the video on Step 8 of the investigation. (2:09 min.)

- Direct students' attention to the following before beginning the video:

In this video Aidan and Dr. Shannon will talk about making observations and comparisons to identify the material found at the site. Listen for tips that will help you as you examine the artifacts for your site.

STEP 9 (60-70 minutes)

- Take detailed notes to follow these steps as you examine your selected artifacts
- Select a site that will help answer your research question.
- Then, select artifacts that will help answer your research question. Be prepared to share what you find with your research team.
- Make detailed observation of your artifact and compare it to other common materials from Range Creek to determine the material it was made from and make inferences about the type of the type of object it belonged to.
- Consult the research scientists to help you determine the function of your artifacts.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 3

- Note each site has different artifacts:
 - Residential Village - 12 artifacts
 - Storage Area - 4 artifacts
 - Rock Shelter - 10 artifacts
 - Artifact Scatter - 11 artifacts
- With their partners or in research teams, students will collectively gather information about all of the artifacts in their site.
- If students are working in a research team they could select one of their research questions to work together to answer.
 - Each student can select 1-3 different artifacts to share with their research team. This is a good way to differentiate based on learner needs and reflective of the nature of scientific research.
- Consider your learning goals and remember that, in the end, we've designed this to support students' critical thinking skills. Better to investigate fewer artifacts and be able to reason with the evidence gathered than to be overwhelmed with more work than can be managed.

SECTION 4: ANALYZE WHAT CAN THESE ARTIFACTS TELL US ABOUT THE PEOPLE WHO USED THEM?

(30 minutes)

OVERVIEW

Students will use their artifact observations to evaluate and analyze the activities that took place in Range Creek Canyon more than a thousand years ago.

ASSESSMENT

- **Connections:** Use the evidence from examining artifacts to determine the activities of the people that used them.
- **Interpret:** Make inferences about the activities that took place in Range Creek and what that can tell us about the lives of people who lived there.

STUDENT ACTION

TIPS FOR SUPPORTING CRITICAL THINKING

STEP 10 (5 minutes)

- Watch the video on Step 10 of the investigation. (4:03 min.)

- Direct students' attention to the following before beginning the video:

In this video Aidan and Dr. Shannon will discuss how evidence is analyzed and used to classify your artifacts for further research.

STEP 11 (10-20 minutes)

- Select a site from the drop-down menu, then drag and drop your artifacts into the categories your evidence suggests they were used for.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 4

- Research teams work together to classify their site's artifacts into activity categories.
- Guide students to connect their evidence to the activity categories. You could ask, "Why do you think that?"
- *Note: You can find additional information about each activity category by clicking on the activity name.*

STEP 12 (10-20 minutes)

- Take careful notes on how these research methods help archaeologists learn more about the various activities that took place in Range Creek.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 5

- With their research teams students check in with experts to learn more about research being done for these different activities. Students should take careful notes to make connections between their artifacts, the activities their artifacts were used for and what that tells them about the Fremont people who used these artifacts.

OPTIONAL STEP 12 (10 minutes)

- Using the link at the bottom of the page, explore the methods archaeologists use to understand more about the artifacts they excavated.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 5

- If time is a factor, know this part of the investigation is optional.
- Encourage students to examine the different methods used by archaeologists in Range Creek to study the Fremont people who lived there. This will provide important context for how new knowledge is generated beyond basic excavation of artifacts. The artifacts are only the beginning when working to understand more about the people who used them.

SECTION 5: INTERPRET HOW DO ARTIFACTS TELL US ABOUT THE LIVES OF INDIGENOUS PEOPLE?

(20 minutes)

OVERVIEW

Students will process their notes and organize their research to help them answer their research questions.

ASSESSMENT

- **Evaluation:** Determine which evidence helps answer their research questions.
- **Interpretation:** Construct a claim about the lives of the Fremont who lived in Range Creek based on evidence gathered in this investigation.
- **Flexible Thinking:** Keep mind open to multiple ideas until all data is evaluated.

STUDENT ACTION

TIPS FOR SUPPORTING CRITICAL THINKING

STEP 13

(5 minutes)

- Watch the video on Step 14 of the investigation. (3:12 min.)

- Direct students' attention to the following before beginning the video:

In this video Aidan and Dr. Shannon discuss the strategies she uses to process her notes. She'll help you figure out how to evaluate your evidence as strong, weak, or disconfirming - important for piecing together the most useful information to answer your research questions.

STEP 14

(10-20
minutes)

- Evaluate the evidence you have collected to write an evidence-based claim to answer your research questions.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 6

- Support students as they interpret the evidence they collected throughout this investigation.
- Work backwards from their question to review and evaluate their notes to determine which pieces of evidence will be valuable to their research goal.
- A mind-map might help them organize their thoughts.
- An example claim could look like:
- The people who lived in Range Creek participated in *[insert activities that help answer your research question]*. I know this because the *[list artifacts]* provide me with evidence of these activities. *[Artifact]* provides *[strong, weak, or disconfirming]* evidence of *[name activity(ies) and describe what that tells you about the people]*.

SECTION 6: COMMUNICATE WHAT WAS DAILY LIFE LIKE FOR THE PEOPLE OF RANGE CREEK?

(20 minutes)

OVERVIEW

Students will use their research to develop archaeological report that answers their questions about what the artifacts found at Range Creek can tell us about the people who used them. Then, they will compare their lives today with the Fremont people they've been studying.

ASSESSMENT

- **Interpretation:** Make inferences about the activities that took place in Range Creek and what that can tell us of the Fremont people who lived there.
- **Connections:** Make evidence-based connections between the past and present using artifacts.

STUDENT ACTION

TIPS FOR SUPPORTING CRITICAL THINKING

STEP 15

(5 minutes)

- Use your findings - all of them including your observations, notes, and ideas - to discuss what life was like for the people of Range Creek.

- Encourage students to discuss their evidence/ observations and how they interpreted what they learned about the Fremont who lived in Range Creek.

STEP 16

(30-60
minutes)

- Use what you've learned to complete an archaeological report of your findings.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 7

- The archaeological report can be a formal paper using the research they've collected. It can also be a podcast, or any other format of your choosing.
- Templates are found on the "Step 16" page and on the "Support Materials" page.
- If using the podcast assignment all students/research groups could make an episode, each focusing on different aspects of RC, and then put them together as a series.

STEP 17

(10 minutes)

- Watch the video on Step 10 of the investigation. (4:57 min.)

- Direct students' attention to the following before beginning the video:

In this video Aidan and Dr. Shannon will discuss Dr. Shannon's research and findings about the people of Range Creek. Listen for her evidence. How does it compare with your evidence and findings?

STEP 18

(10-20
minutes)

- Think about objects you use that do a similar task as the artifacts from Range Creek. On your own or with a partner complete the Venn Diagram. Type your responses online and download them OR record them in your RAN.
- Then, take a look at what is in the middle of your Venn Diagram. Reflect on what is the same and what is different about your daily lives.

RESEARCH ASSISTANT NOTEBOOK (RAN): page 8

- Students can work individually or in their research teams to complete the Venn Diagram.
- Encourage students to reflect on what is the same and different about their daily lives. Has the technology changed? In what way? What activities are the same and which are different? How?
- Use this activity as an assessment to check student's ability to make connections and reason with new understandings.
- You may choose to have students continue to explore Range Creek with the Extension Activities at the end of the investigation.