

STEAM Through Heritage Preservation: Middle School Curriculum Summary

Why is this object significant?

Who wore the shoe?

Does the shoe represent *something else, something bigger?*



"While Harris's signature shoe style might not seem like a big deal—and yes, it isn't as significant as, say, the fact that she's the first Black woman and first Indian American vice president - they do send a message about who she is and her approach to politics."

Why Kamala Harris' Converse Are Much More Than Just Sneakers

The Vice President and her trusty kicks are the perfect fit.



CER Claim / Evidence / Reasoning

C

Claim: Answer to a question

- A statement that is said to be true or a conclusion based on observations and/or scientific data.
- The rest of the response (Evidence & Reasoning) should justify the claim.

E

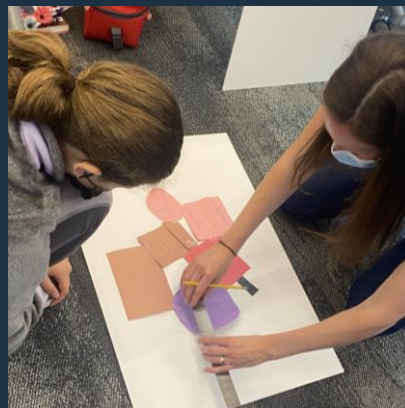
Evidence: Data to support the claim

- Facts gathered from reliable sources.
- Quantitative and/or qualitative data that was provided or collected during a lab procedure.
- Observations from the data should prove the claim is correct.

R

Reasoning: Connects the evidence to the claim

- Explanation: the reason why the claim is true based on facts and data interpretation
- Relevant scientific principals and laws are described.



Unit Summaries

UNIT 1 Understanding Community and the Built Environment, and Sharing MY Community

Students participate in exercises to learn about the many ways community is defined, understand what the built environment is and contemplate how architectural features reflect or reject values and needs of the community.

UNIT 2 Using Claim, Evidence, and Reasoning (CER) to Understand Historic Preservation and the Concepts of Equity and Significance

Students practice classic research, debate, and presentation techniques to investigate the differences between our built and natural environment and to learn the benefits of historic preservation. Students discuss how an equity lens helps to ensure all communities and cultures are represented in historic preservation work. Students are given a range of examples to evaluate and apply criteria for determining significance.

UNIT 3 Architecture and Historic Preservation

Students learn what architecture is, and how architecture expresses different stories and connects us to the past. The students will be exposed to key architectural skills, including the iterative design process; using geometric shapes; determining gross area, perimeter, net area, and volume; working in 3D and 2D; creating 2D bubble diagrams; recognizing patterns and creating tessellations; scale and ratio.

UNIT 4 Structural Engineering and Historic Preservation

Students gain exposure to the language and practice of structural engineers, including identifying basic structural components of a building and making connections to the human body, learning how load travels through a building or object, basic common properties of building materials, and how engineers use math and science to solve problems. Students practice principles of load path and resistance in a model bridge-building and stress testing exercises.

UNITS 5&6 Historic Preservation Community-based Projects

Students work in pairs or teams to identify a local community and research the needs of that community. Students will then develop a compelling narrative and design concept for the re-use of a local historic property or site based upon data reflecting community needs, such as for recreation, affordable housing, or cultural education. Teams will create floor plans, 3D physical models using materials provided in their "kits", renderings/graphics and/or final presentations to local stakeholders (family members, school staff, design professionals, community representatives, and political leaders).

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Unit 1 – Community Unit 2 – Significance



Grade 6 Historic Preservation STEAM Lesson Plan

Unit 2: Identifying CER, Types of Data, and Types of Arguments

Lesson 2 – 1 Class Period / About 50 Minutes

Key Vocabulary (Unit 2 list here)

- Claim
- Evidence
- Reasoning
- Significance/Significant
- Natural Environment
- Built Environment
- Natural Environment
- Quantitative
- Qualitative
- Technical
- Emotional

Required Materials

- Student Sheet "What makes Mount Everest significant?" - digital copies via Google Classroom or photocopied onto a single sheet front to back
- Teacher Answer Key
- CER infographic photocopied for student notebooks
- Significant Places - Quick Info sheets - photocopied - Sustainability tip photocopy enough for one class, and place them in plastic sleeves, and reuse for all classes (even future years).
- Scissors and glue sticks

Required Audio/Visual

- Teacher Google Slide Presentation
- Podcast episode segment from Smash Boom Best - Mt. Everest "Declaration of Greatness" (also embedded in google slides)

Optional Audio/Visual

- Student electronic devices if students are using google classroom to access student sheets (instead of printed sheets)

Standards/Frameworks

STE - Science and Engineering Practice

- Earth's Systems: 6-MS-ESS2-3
- STE Science & Engineering Practices
 - Developing and using models
 - Analyzing and interpreting data
 - Constructing explanations
 - Engaging in an argument from evidence
 - Obtaining, evaluating, and communicating information

Social Studies Frameworks, grades 6-8

- #6. Argue or explain conclusions using valid reasoning and evidence.

Speaking and Listening 6.1, 2 and 4:

- Engage effectively in a range of collaborative discussions with diverse partners on grade 6 topics, texts and issues, building on each other's ideas and expressing their own clearly.
- Interpret information presented in diverse media and formats and explain how it contributes to a topic, text, or issue under study.
- Present information, findings, and supporting evidence.

Reading Standards for Informational Text:

- Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.

Full language [here](#)

Essential Question

- What makes a place significant?
- What's the difference between quantitative and qualitative data?

Objectives

Students will be able to...

- Analyze and interpret a map in order to explain how Mount Everest formed due to colliding continental plates.
- Identify the claim, evidence, and reasoning used to argue why Mt. Everest is a significant place (and more special than the Grand Canyon), in preparation for using the CER method for arguing significance of historical properties.
- Explain the importance of including evidence and reasoning when making a claim about a location's significance.
- Recognize quantitative vs qualitative data.
- Distinguish between technical and emotional arguments.

Part 2 - Recognizing Qualitative vs. Quantitative Data

Read this first! Types of Data:



QUANTITATIVE data is numerical data (numbers!) that reports a **quantity** such as an amount, measurement, or statistic. Quantitative data often is displayed in charts and graphs.



QUALITATIVE data is data that describes a **quality**, characteristics, or features of something, such as observations of a building's color, structure, or location.

Instructions: Determine whether each of the following pieces of **data** presented by Kasha is

QUANTITATIVE or **QUALITATIVE**. Circle or highlight your choice.

- Only half the people who ever attempt to climb Mt. Everest make it to the top and back because it's the highest point in the world, 29,000 feet above sea level.
- Hundreds of people have died trying to climb Mt. Everest.
- Mt. Everest hikers have no choice but to poop on the side of the mountain.
- There isn't a lot of wildlife on Mt. Everest because it is so cold; however, the animals that do live there are really special, such as snow leopards, red pandas, and Himalayan black bears.
- Mt. Everest is one of several mountains in the Himalayan Mountain Range, on the border where India meets the continent of Asia.
- People must hike in subzero temperatures and risk getting hit with winds 100 miles per hour - same wind speed found in some hurricanes!
- Due to climate change, more than 2/3 of Himalayan glaciers may melt by the year 2100, causing a lot of flooding and crop damage.
- Because the amount of oxygen decreases rapidly at the top of Mt. Everest, it's hard to breathe, so hikers need to bring their own oxygen supply.
- The first people to climb Mt. Everest successfully were a bee keeper from New Zealand and a Sherpa from Nepal.
- Mt. Everest started forming about 60 million years ago, when two land masses began colliding slowly over time.

QUANTITATIVE	QUALITATIVE
QUANTITATIVE	QUALITATIVE
QUANTITATIVE	QUALITATIVE
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QUANTITATIVE	QUALITATIVE
QUANTITATIVE	QUALITATIVE
QUANTITATIVE	QUALITATIVE
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QUANTITATIVE	QUALITATIVE

Art Extension Activities

"Kintsugi: The Art of Precious Scars"

Fun Preservation Art Activity: Preservation is the act of protecting something of value (social, emotional, financial, cultural, etc.), whether it is in good condition or not. Kintsugi (golden joinery) is the Japanese art of repairing broken pottery with lacquer dusted or mixed with powdered gold, silver, or platinum, a method similar to the maki-e technique.

As a philosophy, it treats breakage and repair as part of the history of an object, rather than something to disguise.



"Who Lives, Who Dies, Who Tells Your Story?"

Show clips of the musical Hamilton, which is a sung-and-rapped-through musical that casts non-white actors as the Founding Fathers and other historical figures. Described by the creator as "America then, as told by America now." Ask the students what parts are "modern" (e.g. the language) and what parts are "historic" (e.g. the clothing).

Why is it important to share stories from our past in modern ways? Does it matter whose perspective the story is told from?



Scripts + Lesson
Plans

Slides + Assessments +
Handout Materials

Art Extension
Activities

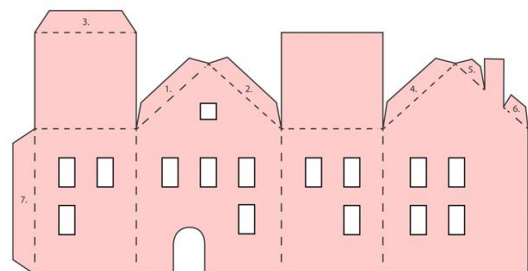
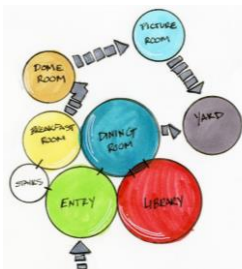


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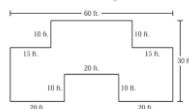
NCPE

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4. The diagram below shows the dimensions of a garden. Mark your answer here: 4. ☐ A ☐ B ☐ C ☐ D



In the diagram, all intersecting line segments intersect at right angles. What is the area of the garden?

- A. 1200 sq. ft.
- B. 1300 sq. ft.
- C. 1400 sq. ft.
- D. 1800 sq. ft.



Unit 3 – Architecture
and Historic
Preservation

Unit 4 – Engineering
and Historic
Preservation

Unit 5 and 6 –
Community-based
Design Project