

Virtual

STEAM EXPEDITION TO THE PARTHENON



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Katherine Petrole
Director of Education, The Parthenon
katherine.petrole@nashville.gov



NASHVILLE PARTHENON EDUCATIONAL RESOURCES

VIRTUAL STEAM EXPEDITION TO THE PARTHENON



TEACHER PRE-VISIT GUIDE

Dear STEAM teachers,

Thank you for planning your Virtual STEAM Expedition to the Parthenon located in Centennial Park—we hope you enjoy your visit! The Nashville Parthenon is looking forward to your sixth grade STEAM middle schoolers visiting our museum for one of their two 2020-2021 STEAM Expeditions. We are excited to have your students experience something extraordinary while learning STEAM + Social Studies + the 4Cs!

The following is a brief pre-visit information guide to assist you and your students in preparing for your virtual STEAM Expedition.



Welcome to the Nashville Parthenon!

We hope you and your students continue to discover how Science, Technology, Engineering, Arts, and Math can combine with Social Studies and History to help us learn about the civilization that built the Parthenon both in Athens, Greece, in the 5th century BCE as well as in Nashville, Tennessee, in 1897. Along the way, your students will use Collaboration, Communication, Critical Thinking, and Creativity skills as they explore the Parthenon and its environs throughout their virtual STEAM Expedition.

Virtual STEAM Expedition Overview:

Your STEAM Expedition to the Parthenon may include:

- ▶ **Greek Mythology Tour:** Students will join Katie, Director of Education, in a series of short videos to see and hear information about the museum content that highlights Greek mythology at the Parthenon, including Greek gods, such as Athena and Poseidon, as well as other mythological characters like Medusa, the Titans, and more.
- ▶ **Architecture Challenge:** Students will join Katie, Director of Education, in a series of short videos to see and hear information about ancient architecture while exploring the exterior of the Parthenon. The videos will help everyone discover interesting architectural features from the columns to measurements to curves.

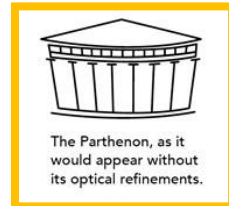
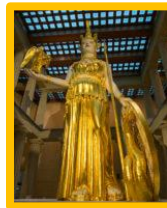
Virtual STEAM Expedition to the Parthenon

Students will learn to...

- Describe the purposes of major Greek architecture, including the Parthenon and the Acropolis. *Social Studies Standard 6.49*
- Compare and contrast life in Athens and Sparta. *Social Studies Standard 6.43*
- Describe the myths and stories of classical Greece; give examples of Greek gods, goddesses, and heroes (Zeus, Hermes, Aphrodite, Athena, Poseidon, Artemis, Hades, Apollo), and events, and where and how we see their names used today. *Social Studies Standard 6.46*
- Hear mythology stories from the Iliad and Odyssey. *Social Studies Standard 6.47*
- Design or redesign objects, places, or systems that meet the identified needs of diverse users. *Visual Arts-Crete Standard 6.VA.Cr2.C*

Student will explore...

- a 42-foot tall statue of the goddess Athena
- art featuring Greek mythology
- architectural secrets of the building



Students will create...

- A baseline knowledge of the Parthenon through the pre-visit activity.
 - Students will read an article adapted from a scholarly text by the Greek archaeologist, Manolis Korres, who has been studying the Parthenon for decades.
- An experiment to measure distances with unconventional measuring units.
 - Students will use found objects to measure and compare the distances between the columns.
- Memorable learning experiences at their city's cultural icon.
 - Students will spend the morning with friends and family learning from museum experts.
- Time to reflect on their experience.
 - Students will answer questions about their learning experience at the Parthenon.
- Bring STEAM & Social Studies into their homes.
 - Students will be challenged to create an ancient structure out of household materials.

New in 2021!

Due to COVID-19, the STEAM Expeditions are virtual. As a result, students may not have the chance to ask questions of Parthenon staff and volunteers as they arise. To accompany this asynchronous STEAM Expedition, Parthenon staff would be delighted to join a synchronous or an asynchronous follow-up learning experience to let students ask archaeology, history, and art history questions.

Please coordinate this learning experience with Tiffany Griffin-Minor.



Please note that some nudity is present in the Greek art.

Frequently Asked Questions:

What will the students be doing on their STEAM Expedition?

Students will:

- complete a short pre-visit reading
- watch a series of videos about architecture in ancient Greece
- watch a series of videos about ancient Greek mythology
- answer a list of post-visit reflection questions
- complete a post-visit architecture challenge

If students want to visit the Nashville Parthenon with their families, what are your regular hours?

Starting March 16, 2021, museum hours are Tuesday-Thursday 9:00am-7:00pm, Friday-Saturday 9:00am-4:30pm, and Sunday 12:30-4:30pm

Nashville Parthenon Staff Contacts:

Nashville Parthenon Phone: 615-862-8431

Katie Petrole
Director of Education
katherine.petrole@nashville.gov

Jennifer Richardson
Education & Curatorial Assistant
jennifer.richardson@nashville.gov

Lauren Bufferd
Assistant Director
lauren.bufferd@nashville.gov



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STUDENT PRE-VISIT ACTIVITY

*"Many visitors to the Athenian Acropolis have wondered how the large masses of marble used for the monuments were originally hauled to the top of the sacred rock."
-Dr. Manolis Korres*

Introduction:

Have you ever wondered how ancient Greeks built their temples and monuments that have lasted for thousands of years?

One archaeologist, Dr. Manolis Korres, also asked this same question. He spent two decades leading the Parthenon Restoration Project for the Greek Ministry of Culture, meaning he was the lead archaeologist in charge of helping keep the Parthenon in Athens, Greece, safe by studying the monument and rebuilding areas in danger. Dr. Korres is also famous for creating drawings that help us understand how people lived and worked in ancient times.

Dr. Korres wrote a book called *The Stones of the Parthenon* (J. Paul Getty Museum, 2000) whose main character is a column capital that may or may not be used in the Parthenon itself. His book was inspired by the discovery of a large block that looks like it had part of a Doric column capital carved out of the block, but the carving was not finished. We know that large sculptures and building blocks were only roughly carved out near quarries where the stone was harvested, and that final details were carved very near to the stone's final destination.

This is the story of quarrying a block of marble for an 11-ton Doric column capital and transporting it from the quarry to the Acropolis at Athens. Start with a preview some vocabulary words and continue with the story below.

Vocabulary:

<u>Athens</u>	The capital of modern Greece. Athens was one of the leading cities of ancient Greece and the capital of the city-state by the same name.
<u>Acropolis</u>	The Acropolis of Athens is the tall rock form south of the center of ancient Athens. Throughout many years, many temples were built, including the Temple of Athena Parthenos (the Parthenon). Acropolis means "high city" in Greek.
<u>Capital</u>	The top part of a column.
<u>Doric order</u>	The style of the column capitals on the Parthenon exterior.
<u>Ionic order</u>	The style of the column capitals in the Treasury (interior, back room).
<u>Parthenon</u>	The main temple on the Athenian Acropolis, dedicated to the city's patron goddess, Athena. It was the last of many temples to Athena on the Acropolis.
<u>Pediment</u>	The triangular shape on the short side of a building.
<u>Pentelikon</u>	Mount Pentelikon is a mountain 10 miles northeast of Athens with marble used to make the Parthenon.
<u>Winch</u>	Machine used for pulling or hauling heavy loads, consisting of a rope coiled around one or more drums.

Short Reading Assignment:

"The Half-Finished Block"

Adapted from *The Stones of the Parthenon* by Dr. Manolis Korres

About 2,500 years ago, an old temple on the top of the Acropolis in Athens is undergoing major renovations. Giant scaffolding, like the scaffolding that you see all over Nashville today, is set up to create a much larger temple than the one before it.

For the first time ever in their city, the new temple will be made of marble. This new temple is the famous Athenian building known as "The Parthenon".

The marble quarry, where experienced and professional quarrymen work with stonecutters, foremen, and architects, is located on a nearby mountain called Mt. Pentelikon. Mt. Pentelikon is 10 miles away from the Acropolis. Ten miles is approximately the distance from Nashville, TN, to Brentwood, TN—which would take over 2.5 hours to walk at a steady pace.

So, how does marble stone in the ground get to its place on the Parthenon?

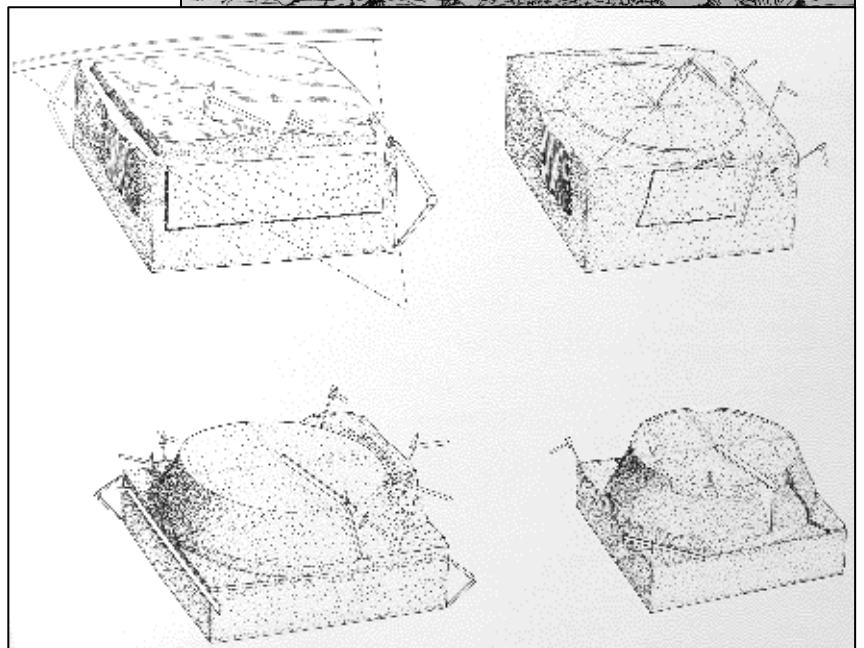
First, masons work to separate a large block of marble from the mountain. Simple machines such as iron wedges and long levers help split the stone block apart.

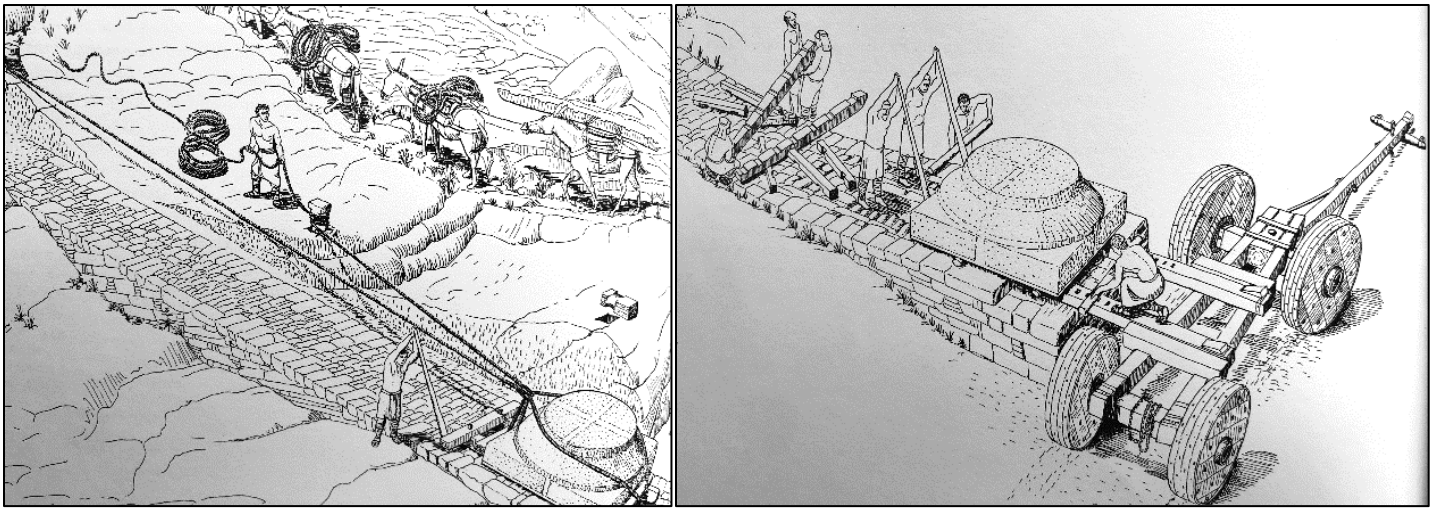
Then a master mason inspects the block to find weak points or cracks in the stone. The master mason directs workers on how to cut the best part of the block into the proper shape: a Doric column capital. For this, the mason needs create a large square block.

Large fragments separated away from cutting and carving the block are not wasted—they could be repurposed for a section of the pediment or other building parts.

After more smoothing and shaping, tools such as rulers, calipers, chisels, and various squares and angles complete more stages in forming the column capital.

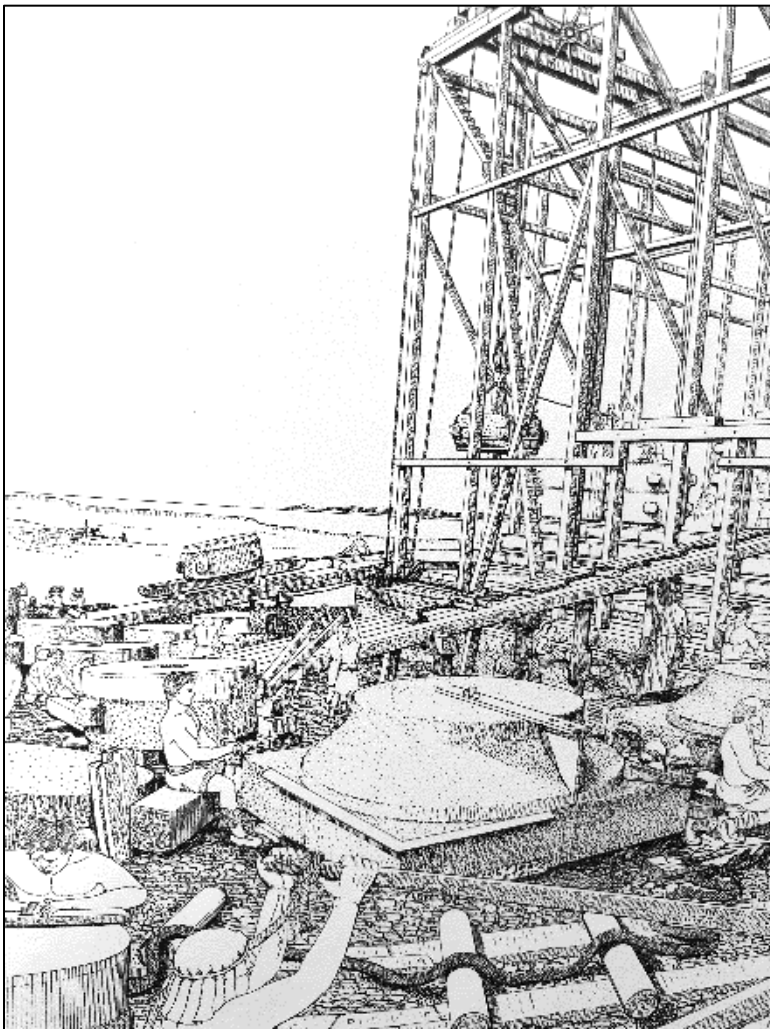
The goal is to whittle down the block into a "half-finished shape". This work could take about two months.





A wooden sled helps move the half-finished capital to a place where it can be safely lifted with ropes and a winch (a lifting device). The block then travels on a stone road down the mountain to a loading platform where it is transferred to a wagon.

Mules and drivers transport the half-finished column to the city, where fresh mules are harnessed up before the hill up to the top of the Acropolis. Pulleys help safely slide the sled with capital up the steepest and uppermost hill.



An architect inspects the piece for cracks while masons examine the dimensions, work that demands expert knowledge of geometry.

The architect learns that a crack was noted early in the column's cutting and spots the crack that was reported.

Hopefully most of the crack can be removed during the finishing of the Doric column capital and, if needed, the capital can be reinforced with iron clamps to strengthen it. But if the crack is too dangerous, it will not be used.

According to Dr. Manolis Korres, "The Parthenon, the most illustrious building ever erected by the [Athenian] state, and the greatest accomplishment in the technology of stone, is almost finished."

Conclusion:

You have just read a shorter, adapted version of a book by the famous Greek archaeologist Dr. Manolis Korres. His book is about how ancient Athenians brought stone from nearby mountains to the top of the Acropolis for use in building the Parthenon over 2,000 years ago. But the block that was featured in the story had a problem—a crack, or fissure. Dr. Korres calls the Parthenon “the greatest accomplishment in the technology of stone”. Do you think that ancient Athenian architects would complete that half-finished block to become one of the official Doric column capitals? Why or not?

Hint: There is no right or wrong answer.
If you were the architect, what would you do?



Source for adapted text, quotes, and all images:

Korres, Manolis. *The Stones of the Parthenon*. J. Paul Getty Museum, 2000.



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STEAM EXPEDITION VIDEO PLAYLIST

Since students cannot come to the Parthenon in person, students will watch a series of short videos highlighting the connections to ancient Greece and Greek mythology inside the Parthenon. Next, students will watch a series of videos that explain, discuss, and discover the architecture of the Parthenon.

While the videos can be viewed in any order, the recommended order established in the playlist below most closely replicates the on-site experiences students can have on their next visit to the Parthenon.

Parthenon STEAM Playlist:

<https://youtube.com/playlist?list=PL1LyhdeQy3gVal3LUWyL1ZQm4MNpdsLhb>

The playlist includes:

Greek Mythology Virtual Tour videos:

- Parthenon STEAM Welcome & Intro (Greek Myth Intro)
- Parthenon STEAM Athena
- Parthenon STEAM Athena's Shield
- Parthenon STEAM West Pediment
- Parthenon STEAM East Pediment
- Parthenon STEAM Bronze Doors
- Parthenon STEAM Ionic Columns
- Parthenon STEAM Greek Mythology Conclusion

Architecture Challenge Virtual Tour videos:

- Parthenon STEAM Architectural Challenge Intro
- Parthenon STEAM Vocabulary
- Parthenon STEAM Exterior Architecture
- Parthenon STEAM Optical Illusions
- Parthenon STEAM Measuring Curvature
- Parthenon STEAM Intercolumniation
- Parthenon STEAM Columns
- Parthenon STEAM Architectural Challenge Conclusion

Video titles, links, time, and descriptions are provided in the following two sections about the Greek Mythology Virtual Tour and Architecture Challenge Virtual Tour.



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GREEK MYTHOLOGY VIRTUAL TOUR

These videos are in the same order as the STEAM playlist, and can be accessed individually by following the link beneath each video title.

Parthenon STEAM Welcome & Intro (Greek Myth Intro)

<https://youtu.be/DZ2-8vllc4c>

Length: 1:14

This video introduces the Parthenon and explains what students will see and learn on the Mythology Tour.

Parthenon STEAM Athena

<https://youtu.be/SB6el4zyrUU>

Length: 6:40

This video introduces the statue of Athena while explaining her role in mythology and her connection to Athens.

Parthenon STEAM Athena's Shield

<https://youtu.be/PUWwnfXigTU>

Length: 3:39

This video discusses the mythology story of the Greeks vs. Amazons on the outside of the shield, and Greek gods vs. Giants or Titans on the inside of the shield.

Parthenon STEAM West Pediment

<https://youtu.be/J7wjic7rBIY>

Length: 5:25

This video shares the purpose of this special room, a description of how artists use maquettes, and a close look at the pediment sculpture that tells the story of contest for the god of Athens.

Parthenon STEAM East Pediment

<https://youtu.be/o3w9dWjEoTo>

Length: 7:07

This video explores the Greek gods on the East Pediment and the birth of Athena.

Parthenon STEAM Bronze Doors

<https://youtu.be/bcluRaSCdto>

Length: 2:25

This video gives a detailed look at the largest matching pair of bronze doors in the world and their special decorations.

Parthenon STEAM Ionic Columns

<https://youtu.be/EUAc5C8rA8Q>

Length: 1:32

This video investigates what makes Ionic columns unique.

Parthenon STEAM Greek Mythology Conclusion

<https://youtu.be/u5AOyL9xQ68>

Length: 1:15

This video summarizes the Greek Mythology Tour and encourages students to complete the post-visit activities.



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ARCHITECTURE CHALLENGE VIRTUAL TOUR

These videos are in the same order as the STEAM playlist, and can be accessed individually by following the link beneath each video title.

Parthenon STEAM Architectural Challenge Intro

<https://youtu.be/-TBs-tvJq-Y>

Length: 0:46

This video introduces the Parthenon and explains what students will see and learn on the Architecture Challenge.

Parthenon STEAM Vocabulary

<https://youtu.be/A5OUUh56Aqc>

Length: 4:46

This video explains the terminology used to describe ancient Greek temples.

Parthenon STEAM Exterior Architecture

https://youtu.be/iZuQV7Wos_w

Length: 3:15

Filmed outside, this video is an overview of the purpose of the Parthenon and introduces architectural refinements.

Parthenon STEAM Optical Illusions

https://youtu.be/9mvBx_kFSWA

Length: 1:27

Filmed on the west side, this video examines the optical illusions in the horizontal and vertical lines that make the Parthenon appear perfect.

Parthenon STEAM Measuring Curvature

<https://youtu.be/RJzjkWhc0qE>

Length: 1:52

This video shows how to discover the curvature of the Parthenon's base using a clipboard. Watch part of the clipboard disappear in the curve!

Parthenon STEAM Intercolumniation

<https://youtu.be/21rZkLKLZ24>

Length: 2:07

Filmed between the columns on the exterior of the building, this video conducts an experiment to measure the distance between columns at the corners versus columns on a long side.

Parthenon STEAM Columns

<https://youtu.be/i5HZXFFGYqg>

Length: 1:01

From the colonnade, this video shows that the columns lean slightly inward.

Parthenon STEAM Architectural Challenge Conclusion

<https://youtu.be/fyIK03491i0>

Length: 1:01

This video summarizes the Architecture Challenge and encourages students to complete the post-visit activities.



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POST-VISIT REFLECTION

Your students were able to experience the Greek Mythology Tour & Architecture Challenge during their STEAM Expedition. These two post-visit experiences will supplement their virtual visit.

The following questions can serve as a post-visit reflection for your students. This can be done through a 15-minute class discussion, or these questions can be assigned for homework and assessment.

1. Describe the architecture of the Parthenon.
2. What separates a Doric column from an Ionic column?
3. What function did the Parthenon have back in ancient Greece?
4. Why would Athens, not other city-states like Sparta, build this architectural masterpiece?
5. Who is king of the Greek gods?
6. List names of gods and goddesses you remember seeing at the Parthenon, and their roles.
7. Before these Olympian gods ruled Greece, there were other older gods. What are these gods called?
8. What is the story of how Athena was born?
9. How would you describe the statue of Athena?
10. Think back to helmet, spear, and shield of Athena. What mythological creatures were present on her armor?
11. Name something that was used or created in ancient Greece that is still used today.
12. How do you think museum visitors might interact with the building the most?
13. Do you think that Nashville is still the "Athens of the South"? Why or why not?
14. What surprised you about your virtual visit to the Parthenon today?



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POST-VISIT CHALLENGE

It's time to put your ancient architecture skills to the test!

Using household materials, build an ancient structure similar to the Parthenon.

Building supplies can include anything found in your home: kitchen utensils, stuffed animals, toys, furniture, anything!

Example:



Source: J. KL. Misener, www.jlmisener.com/blog/2020/3/27/diy-toilet-paper-parthenon

Share pictures of your architectural masterpiece with the class, and have teachers tag @nashvilleparthenon on Facebook and Instagram or @nashparthenon on Twitter.