LIMITED ENGAGEMENT | February 10 - May 28, 2018

Explorations
EDUCATOR GUIDE

MAYA
HIDDEN WORLDS REVEALED

Produced in partnership by the Science Museum of Minnesota, Denver Museum of Nature & Science, and the Museum of Science, Boston.

MILWAUKEE PUBLIC MUSEUM

FOR FIELD TRIP INFORMATION:
www.mpm.edu/maya

IN THIS GUIDE

Encounter the richness of Maya culture by examining centuries-old authentic artifacts, traditions, and world views. Experience immersive life-size re-creations of Classic Maya architecture, and explore the hidden worlds of the Maya past and present.

Your students will have the opportunity to:

- **Engage in hands-on explorations** of building arches, deciphering hieroglyphs, drilling techniques, translating a Maya calendar, and more.
- **Understand** that contemporary Maya people maintain many cultural practices and beliefs that link them to their ancestors.
- **Take part in the process of discovery** to learn how archeologists use science, technology, and contemporary Maya voices to interpret the past.
- **Find evidence** that shows the relationship between writing, mathematics, astronomy, architecture, urban planning, and the sophisticated world view of the Maya.

Objects from the collections of the National Institute of Culture and History, Belize; Harvard University's Peabody Museum of Archaeology and Ethnology; the University of Pennsylvania Museum of Archaeology and Anthropology; the Science Museum of Minnesota; the Denver Museum of Nature and Science; and the San Diego Museum of Man.

Exhibition Partners: Science Museum of Minnesota
Denver Museum of Nature and Science
Museum of Science, Boston

Field Trip Information

***Maya* Exhibition, General Museum Admission, and Planetarium Program**

$13 per student

$4 per chaperone for chaperones within the required ratio

$15 per chaperone for chaperones in excess of the required ratio

For further information and field trip guidelines, including required student-to-chaperone ratios, please visit www.mpm.edu/field-trips.

Plan your trip today with one of our field trip specialists by calling 414-278-2714.

A Maya warrior, with black body paint and dressed in jaguar robes and headdress, adorns a ceramic plate that is over 1,200 years old.

Collection of DMNS.

BEFORE YOU VISIT

- Do some preparation activities before your visit. Use suggestions in this guide and the resource list for more ideas.
- Review this guide for connections to your curriculum. Choose the activities that meet your needs best. Jigsaw groups to provide fewer questions for each student, but still cover topics you need.
- Add your own page(s). Bring journals or composition notebooks if you use these in classroom work. Bring sturdy cardboard to write on if you plan to use single pages during your field trip.
- Share expectations, plans, and schedules for the visit with students and chaperones. Give chaperones copies of any activities students will do.
- Encourage students to spend time in each section to go beyond simply answering questions.

DURING YOUR VISIT

- Ask students to add their own questions and observations that arise during their exhibit explorations.
- Flash photography is NOT allowed in the exhibition. Photographs without a flash are permitted and encouraged.
- Students must be with their chaperones to enter the exhibition, and should stay with the chaperones throughout.
- Divide your class into small groups to work together in the exhibition.

Mystery of the Maya Omnitheater Film

Don't miss these great shows in MPM's National Geographic and Dome Theater & Daniel M. Soref Planetarium

The First Stargazers

Travel back in time to explore *The First Stargazers*! Experience how ancient eyes saw the sky above. Your guide is Nashira, a friendly time traveler who reveals amazing tales from cultures all across the globe. Witness the very first stargazer making a moon calendar out of animal bone 30,000 years ago. Discover Kukulkan, the feathered serpent god of the Maya. You will also tower above the Giza pyramids, fly around fascinating Stonehenge, and have many more ancient adventures!"

MPM's live *Wisconsin Stargazing* programs will feature a short segment on the Mayan Zodiac constellations.

Lectures and Programs

The Milwaukee Public Museum is offering lectures from expert Mayanists in conjunction with *Maya: Hidden Worlds Revealed*. Visit www.mpm.edu/lunchlecture and www.mpm.edu/scienceontap for more details.

MPM is offering a limited-term education program in conjunction with *Maya: Hidden Worlds Revealed*. Employ archaeological methods to examine artifacts from *Maya: Hidden Worlds Revealed*, drawing conclusions about the culture that they reveal. Working in teams, students use the artifacts and exhibits to conduct their own archaeological field survey, delivering oral reports on their observations.

EXHIBITION OVERVIEW

To the Maya, both the past and present, the ceiba is a sacred tree. Its trunk is of this world–that of the living–while its roots plunge into the depths of the underworld and its lofty branches reach into the heavens above. In many Maya cities and villages, the giant ceiba stood as a symbol of a universal connection between the earth, the heavens, and *Xibalba*–the underworld. In *Maya: Hidden Worlds Revealed,* the construct of the three worlds, symbolized by the ceiba tree, helps show interconnections, growth, death, and rebirth.

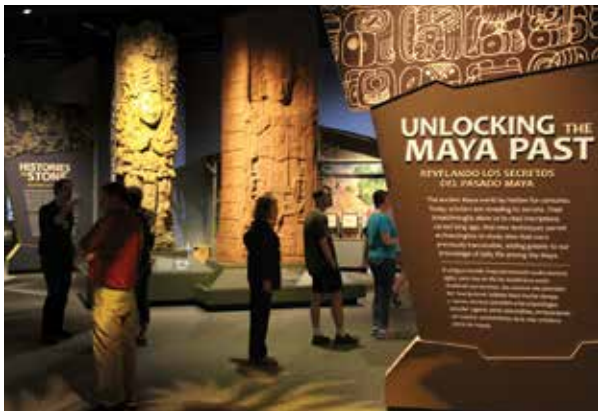
A floor plan is shown on page 8.

INTRO THEATER

Maya narratives have repeated themes of death and rebirth. The brief introductory video provides an analogy between the story of the death and resurrection of the Maya Maize God, and the abandonment and gradual rediscovery of Maya cities, monuments, writing, and life ways of kings and nobility of the time period over 11 centuries ago.

It also briefly introduces the methods Mayanists have used to explore the Maya world of the past: archaeological investigations, ethnographic analogies, and the complicated decipherment of Maya script.

Learn how scholars have begun to unlock secrets of life long ago in Maya lands and read inscriptions carved hundreds of years ago. New techniques allow archaeologists to study sites that were previously inaccessible, adding greatly to our knowledge of daily life among the Maya. Scientists begin to understand Maya culture by excavating cities and house mounds, interpreting objects recovered, deciphering glyphs, and learning from Maya people living today.



- An activity will let you see the gorgeous cities of the ancient Maya, introduced to the rest of the world by early explorers to this region.
- Use an interactive time line of glyph decipherment and learn why scholars and Maya people alike are excited about our ability to read the glyphs.
- Try your hand at some Maya mathematics.
- Examine two massive replica stelae—once unreadable, but now a wellspring of information about Maya rulers and their relationships.

Maya hieroglyphs carved into stone stelae, only recently deciphered, tell of great and powerful dynasties. Get a sense of how to read a stela and how Maya rulers placed themselves at the center of the cosmos as living "world trees."

- A name glyph generator allows you to title yourself, Maya style.

A video, set against a star field and city scape, describes how and why the Maya charted the 365-day solar cycle, predicted solar and lunar eclipses, and precisely tracked the complex orbit of Venus. Astronomical phenomena are closely associated with seasonal changes that inform important agricultural practices for planting maize. Knowledge of the skies could ensure a good harvest—and power.

- Artifacts and replicas illustrate the interaction of astronomy and human responses.
- A calendar translator shows you how the Maya calendar cycles intersect, allows you to correlate important dates in our time to the cycles of Maya time, and lets you print out a personalized stela.

The Maya were excellent urban planners, organizing their cities according to practical needs, environmental constraints, and religious beliefs. Architects, artists, and laborers—who had no wheels or metal tools—incorporated the Maya world view and social hierarchy into city plans and buildings, and modified every inch of their landscape. Explore city size, layout, population, and specific features—such as roadways, agricultural terraces, and reservoirs—that served the tens of thousands who lived in the shadows of these cities. A life-size frieze that once surrounded the top of El Castillo pyramid at Xunantunich, in Belize, is bathed in what archaeologists believe may have been the original colors.

- See construction techniques, learn how a tumpline is used, and build a Maya arch.
- Explore a floor "map" of the city of Caracol, in Belize, and compare it to a 3-D model of the city's center.
- Examine the Maya ball game—believed to be one of the first team sports in human history. Watch a video of the ball game as it's played today, learn how archaeologists think it was played, and pick up a ball game ball—it's heavy!
- Try your hand at pollen identification to learn how scientists use lake sediments and cave decorations to understand land use and climate changes throughout the centuries.

During the 3rd -10th centuries, cities were densely populated, in some cases supporting many more people than the same areas do today. Individual households were the engine of the economy. Their residents worked together to produce and process food, raise children, and properly honor their ancestors; but many households also produced goods such as textiles, tools, jewelry, or pottery for market.

- Try your hand at creating a weaving pattern with blocks.
- Explore a model of an ancient Maya neighborhood, and see a house recreated from archaeological and ethnographic evidence.
- See examples of traditions still practiced by Maya people today.

Hidden beneath the land of the living lay the underworld: *Xibalba*. Caves were physical portals to the underworld and prayers and sacrifices were offered inside. But *Xibalba* was a place of creation as well as death. It was the birthplace of the sun and moon, and life sprang from its depths. As priests ventured underground, they drew nearer to the gods and their prayers took greatest effect.

Artifacts recovered from these caves give a glimpse into rituals that helped priests and kings transcend the earthly world and speak with the gods of the underworld.

- Experience Actun Tunichil Muknal through a re-creation of this ritually important cave.
- Learn to decipher stone carvings from the Chiapas region in Mexico.

Explorations of Maya burials tell us about the structure of Maya society, their world view, and even their diet and lifestyle.

- Witness a re-created tomb and see the spectacular objects that accompanied elites on their journey through underworld.
- A touch table allows you to digitally explore a royal burial. Learn how objects from a burial hint at political relationships between far-flung places.
- Examine photographs of human skeletons and find out what the histories written in our bones tell archaeologists about us.

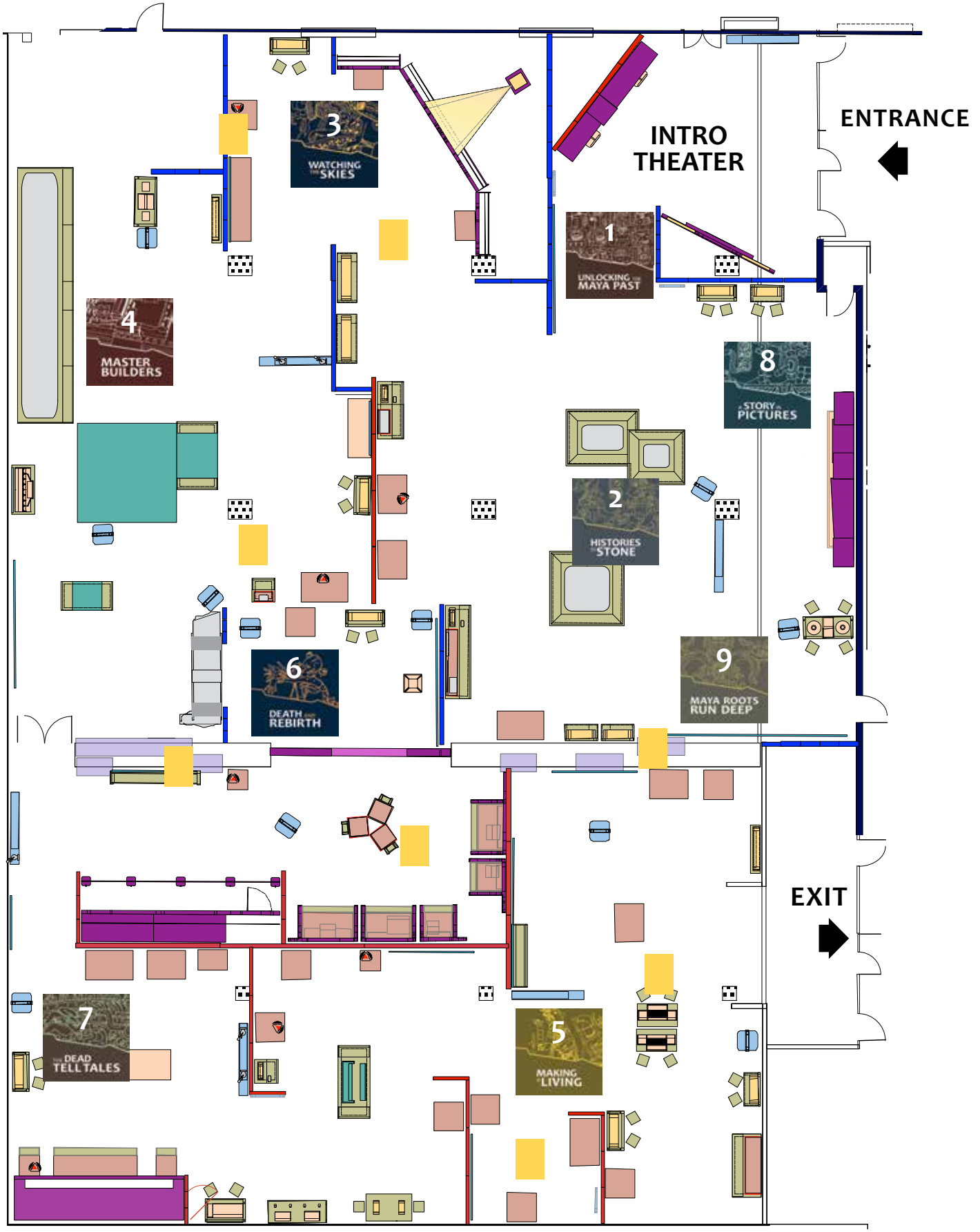
More than a thousand years ago, Maya artists painted the walls of three small rooms in Bonampak with scenes of war, celebration, and life at court. Today, the murals of Bonampak provide an unparalleled view of elite life and warfare in ancient Maya society.

- Step into a re-created mural space to explore courtly life in the late-8th century.
- View images made with an infrared camera to see details of the murals invisible to the naked eye.
- Match objects with their counterparts in the murals. Use the pictures and artifacts to examine themes of elite privilege, ceremony, responsibility, connection, and competition.
- Take a photograph of yourself and see how you'd look wearing the costumes of various court figures.
- Assemble a bow drill and imagine using one to create dental inlays.

Today's Maya are heirs to a culture whose elements have survived thousands of years of transformation, adapting to environmental change, political turmoil, and conquest. Many still speak the languages of their ancestors, wear traditional dress, and keep their sacred calendar.

- In short videos, modern Maya people describe those connections and the meaning they attach to their Maya identity. Through the efforts of scientists and the Maya themselves, a lost history is being recovered.

EXHIBITION FLOOR PLAN



ABOUT THIS TOPIC

The term *Maya* comes from the Yucatec Mayan word that describes the language spoken by indigenous people of the Yucatán Peninsula, México. Western scholars have ascribed this term to all Maya people. Ancient Maya culture is characterized by monumental architecture; by symbols, images, and hieroglyphic writing; and by complex mathematical and astronomical systems.

(Living Maya Time, website: http://maya.nmai.si.edu/the-maya/maya-people)

The Maya were never a single empire, but lived in various densely-populated cities and surrounding regions that shared many aspects of culture throughout this region. As a whole, the Maya people created the longest lasting civilization of the New World. Their culture endured through changes, wars, and disasters until it was suppressed by the Spanish conquest in the 16th and 17th centuries. However, the Maya survived and today there are millions of Maya living in Mexico, Belize, Guatemala, El Salvador, and Honduras.

Vocabulary

Review of these terms would be helpful before your visit to *Maya: Hidden Worlds Revealed*. See *Connecting with the Classroom* section (page 11) for suggestions.

Artifact, Archaeologist, Excavate

Artifacts are objects made, used, or changed by humans. Archaeologists excavate (reveal, record, retrieve) and study artifacts from the past.

Ceiba *(Ceiba pentandra)* also known as the silk cotton or kapok tree.

Trees of the Ceiba genus can grow up to 50m tall, with swollen trunks and large buttresses. As the sacred world trees of the Maya, Ceibas represent the intertwined celestial, earthly underworlds.

Classic Period of Maya Culture, 250-900 AD

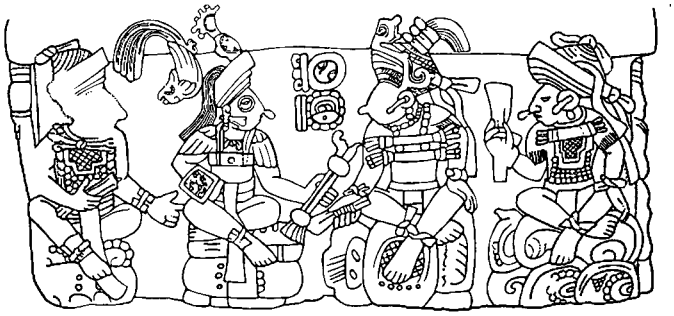
Much of *Maya: Hidden Worlds Revealed* focuses on this time period of Maya culture. But research indicates that distinctive signs of Maya culture first start appearing around 1800 BC.

Corbel Vault

Typical Maya architectural features included the corbel vault. The corbel vault has no keystone, as European arches do, making the Maya vault appear more like a narrow triangle than an archway.

Elite

Small group of people who control the major share of wealth and/or political power.



Glyph

Symbolic figure or character, also called a hieroglyphic. All Maya glyphs are formed from various combinations of nearly 800 signs in the forms of humans, animals, supernatural creatures, objects, and abstract designs. These signs can express meaning, denote sound values, or be pictorial (the picture is the word), and are used to write words, phrases, and sentences.

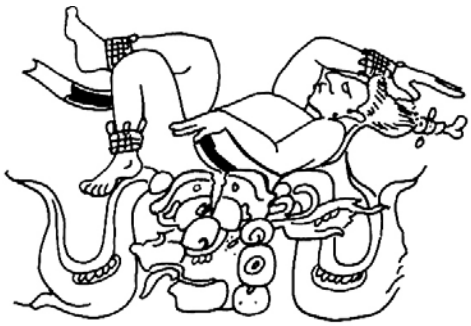
Glyphs appear as very intricate squares laid out in a grid-like pattern. Each square is a glyph block that actually contains one to five glyphs, often forming a word or even a phrase. You will see glyphs on many objects throughout the exhibition.

Huipil *(we-peel)*

Traditional garment made of a piece of rectangular cloth folded and usually stitched down the sides, worn as a blouse. Huipils have been made and worn in this region for centuries. Huipils are still worn by the Maya today.

Maize (Corn, *Zea mays*)

A staple food of Maya, past and present, with a major role in all aspects of Maya life. The Maize God story introduces you and your students to *Maya: Hidden Worlds Revealed* in the introductory theater. Many images or partial symbols of the Maize God occur on artifacts you will see in the exhibition.



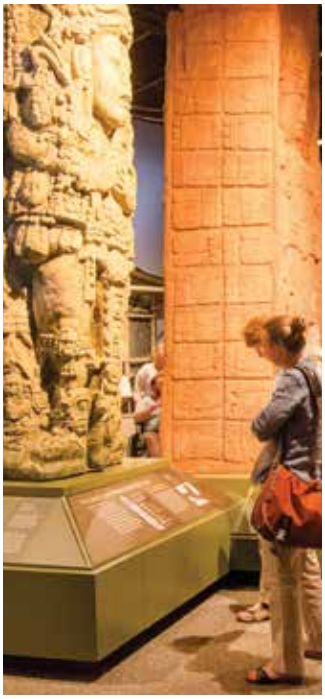
Maize God emerging from a flower.

Scribe

Maya inkwell in the exhibition.

Scribes prepared art and text for public displays glorifying the ruler's triumphs. Most Maya could not read and write during Classic times, so scribes had a very important role in Maya society to reinforce the power and authority of Maya rulers. They were from the noble class, sometimes from the royal family of the city.

Stela (plural: stelae)



Freestanding stone pillars, often of limestone, with figures carved in relief and hieroglyphic text.

http://deyoung.famsf.org/files/collectionicons/index1.html

This interactive website helps students understand several aspects of Maya art and culture (symbols, glyphs, mathematics, materials) through investigation of a stela in the DeYoung Museum's collections. Upper elementary and above.

Tumpline

A strap attached at both ends to a load, and placed over the top of the head, just back from the hairline, so the weight of the load pulls straight down in alignment with the spine. The bearer then leans forward, allowing the back to help support the load. The Maya used this device (and still do today) to carry loads as heavy as their own body weight. Since much of the terrain in the region is uneven, narrow, or rocky, this was more efficient than using wheels or beasts of burden. The Maya did not use either during Classic times.

CONNECTING WITH THE CLASSROOM

Field trips are most effective when integrated with your curriculum. Below are activities that can be used as an introduction to topics included in *Maya: Hidden Worlds Revealed* exhibition. Many can also be used after your trip or as ongoing topic explorations.

BEFORE YOUR VISIT

All Grades

Review the activities to do at the Museum to review any vocabulary that will be new to students. A suggested list of vocabulary is below. (See pages 9 and 10 for definitions.) Add others that may be new to your students.

Archaeologist

Artifact

Ceiba

Corbel Vault

Elite

Excavate

Glyph

Huipil

Maize

Scribe

Stela (plural: stelae)

Tumpline

- Ask students to find the meaning of each word and make a drawing to help them remember the meaning of each word. Discuss each as a class.
- Locate the Maya region on a world map.
- Use images from the websites listed in the Resource section (page 35) to discuss what students will be seeing when they visit the exhibition.
- Gather class questions about the topic. What do students want to know? What do they think they will see and experience? What do they know or think about the Maya? Use their questions as a basis for your field trip guiding questions, or choose from the At the Museum pages (13-27).
- Review the floor plan (page 8) of the exhibition with your students before your field trip. You can also provide floor plan copies to chaperones or individual students.
- Review schedule for the day with students, and share behavior expectations.

Grades K-2

There are no student pages for students in K-2. Please use the Chaperone Page for suggestions for chaperones to use in discussing the exhibits and activities with students. Chaperones can also provide paper and pencils for drawing in the exhibition. Drawing is a great tool for students in an exhibition to focus attention, support observation skills, and provide a change of pace for young students. Drawings can also be used for many post-trip follow-up activities.

Grades 3-5

Preparing for the visit:

- Identify questions, activities, and experiences students are expected to complete during the visit. There is a lot to see and do.
- Use the At the Museum questions (pages 13-16) as guiding questions for students during your visit to the exhibition. Questions should be used at the Museum just for note-taking and documentation to allow students to more fully experience the exhibits and activities. We recommend that students complete their answers after they return to school or as a homework assignment.
- Consider dividing into smaller groups with different questions for each group, then sharing answers after returning to school. Using all of the questions on each page may be overwhelming for some students.
- Maya Math (page 26) is also a page for students to use. Use all or several of the questions on the Maya mathematical notation system. This page can be used for any grade.
- Ask students to bring a journal, notebook, or folder to provide a writing surface as they take notes for their responses.

Grades 6-8

Preparing for the visit:

- Identify questions, activities, and experiences students are expected to complete during the visit.
- Use the At the Museum questions (pages 17-21) as guiding questions for students during your visit to the exhibition. Questions should be used at the Museum for note-taking and documentation, to allow students to experience the exhibits and activities. We recommend that students complete their answers after they return to school, or as a homework assignment.
- Consider dividing into smaller groups with different questions for each group, then sharing answers after returning to school. Using all of the questions on each page may be overwhelming for some students.
- Ask students to bring a journal, notebook, or folder to provide a writing surface as they take notes for their responses. Copy the question pages (17-21) to use all of the questions, or ask students to answer specific questions.
- Maya Math (page 26) is also a page for students to use. Use all or several of the questions on the Maya mathematical notation system. This page can be used for any grade.
- Review questions to consider throughout the whole exhibition. Share post-visit plans about summaries for these questions:
    - o Describe "Maya Lands," the places where the Maya lived in the past and live today. Record details about what the land looks like.
    - o In this exhibition, you will find many places to try out activities. Keep a list of your favorites and your results.
    - o Tradition: Then and now. Find examples of things that people used in Classic Maya times and still have or do now.

Grades 9-12

Preparing for the visit:

- Identify questions, activities, and experiences students are expected to complete during the visit.
- Use the At the Museum questions (pages 22-27) as guiding questions for students during your visit to the exhibition. Questions should be used at the Museum for note-taking and documentation, to allow students to experience the exhibits and activities. We recommend that students complete their answers after they return to school, or as a homework assignment.
- Ask students to bring a journal, notebook, or folder to provide a writing surface as they take notes for their responses. Copy the question pages (22-27) to use all of the questions, or ask students to answer specific questions.
- Divide students into small groups or pairs and ask each group to develop a question to investigate about Maya culture, past or present. As students go through *Maya: Hidden Worlds Revealed*, each section can help them with background information, ways to refine or revise their questions, and sources that provide evidence in developing answers or hypotheses. Question pages can be used to guide students to resources that will help them in working on their own question.
- Tradition: Then and now. Ask students to find examples of things that people used in Classic Maya times and still have or do now. There are examples of contemporary Maya life for comparison, or they can compare Classic Maya life to their own lives today.
- Maya Math (page 26) is also a page for students to use. Use all or several of the questions on the Maya mathematical notation system. This page can be used for any grade.

MAYA INVESTIGATIONS Grades 3–5

Find the title sign for each space in the *Maya* exhibition.

- On these pages, read the questions for that space.
- Take notes to answer the questions.
- Use the notes to write a complete answer to the question after you return to school.

Unlocking the Maya Past

Use your pencil to shade in the map at right where most of the Maya towns and cities were.

Histories in Stone

Look at the stone stelae or other stone sculptures. How many images of people can you find?

Draw a picture of one of them.

Draw a picture of yourself in the same style.

Watching the Skies

The Maya observed the movement of objects in the sky. Which ones were important to them?

Master Builders

Caracol was a city in what is now the country of Belize.

Which of these gives *you* the most information about Caracol? Look at the exhibits in this section, then choose one. Explain why you chose the one you did.

☐ Map of the region _____

☐ Floor map *LiDAR* _____

☐ Small model of the "downtown" _____

What did the builders of Caracol need to build and use this city?

How did they change the land?

Write some ideas here: _____

_____

_____

_____

Try out one of these activities: Use a tumpline OR Build a corbel arch

Draw a picture of your choice (tumpline or corbel arch). Write a caption for your drawing.

What was this used for in the past? _____

What could you use this for in your life today? _____

Making a Living

Imagine that you were living in this city/region about 1,000 years ago. Look around—find examples that show what your life might have been like. Add the examples to your notes in the questions below.

What kind of job would you do? Choose one—most Maya people may have had several of these jobs at the same time.

Choose one: ☐ farmer ☐ weaver ☐ shell artist ☐ scribe ☐ king ☐ ball player

Draw or describe your house:

What food would you eat? Find examples.

_____

_____

If you were doing activities on your own or with other members of your family, where would you go? What would you do?

_____

_____

_____

_____

Death and Rebirth and The Dead Tell Tales

Archaeologists study objects to learn about the past. Find artifacts in this section that help you learn more. Complete this chart with your notes. (Hint: Unless there is one object mentioned, you can choose from many possibilities!)

Object	Location	Interesting fact, idea, or observation
Torch holder	*CAVE, Belize*	
	CAVE in:	*This shows an animal from the region, it is a:*
Shells	*BURIAL, Belize*	

Add to chart above: Find an object you like, tell where it is from, and list an interesting fact, idea, or observation.

A Story in Pictures

Look at all of the pictures that artists painted 1,300 years ago (about 800 AD). Find one item in a picture that tells you about life in that time and place.

What is the item you chose? _____

Draw it here:

What does that item tell you about life in that time and place?

_____

_____

_____

_____

_____

Is there an *object* in this section that is similar to the *item in the picture?* YES NO

Maya Roots Run Deep

Think of photos or exhibits you saw that show something about Maya life *today*. It could be in this section or somewhere else in the exhibition.

What is the same as in the past?_____

What is different?_____

MAYA INVESTIGATIONS – Middle School

Find the title sign for each space in the *Maya* exhibition.

- On these pages, read the questions for that space.
- Take notes to answer the questions.
- Use the notes to write a complete answer to the question after you return to school.

Unlocking the Maya Past

There are many ways to learn about the "hidden worlds" of the Maya.

Describe a fascinating discovery by archaeologists in this region. _____

_____

_____

What did they discover? Be sure to add details. _____

_____

_____

What helps YOU understand this discovery? Check any that you used. You may learn more by seeing things in other sections.

☐ map

☐ artifact

☐ video

☐ written description

☐ model

☐ activity

Describe "Maya Lands"

Record details about what the land looks like as you find evidence. Include details about water, cities, forests, type of terrain, and other things you find in photos, maps, artifacts, models, or video.

_____

_____

_____

_____

Histories in Stone

Find a story shown in a stone carving, artifact or painting. There are many possibilities. Look at the object and read the information to help answer the questions.

Who is the main character? _____

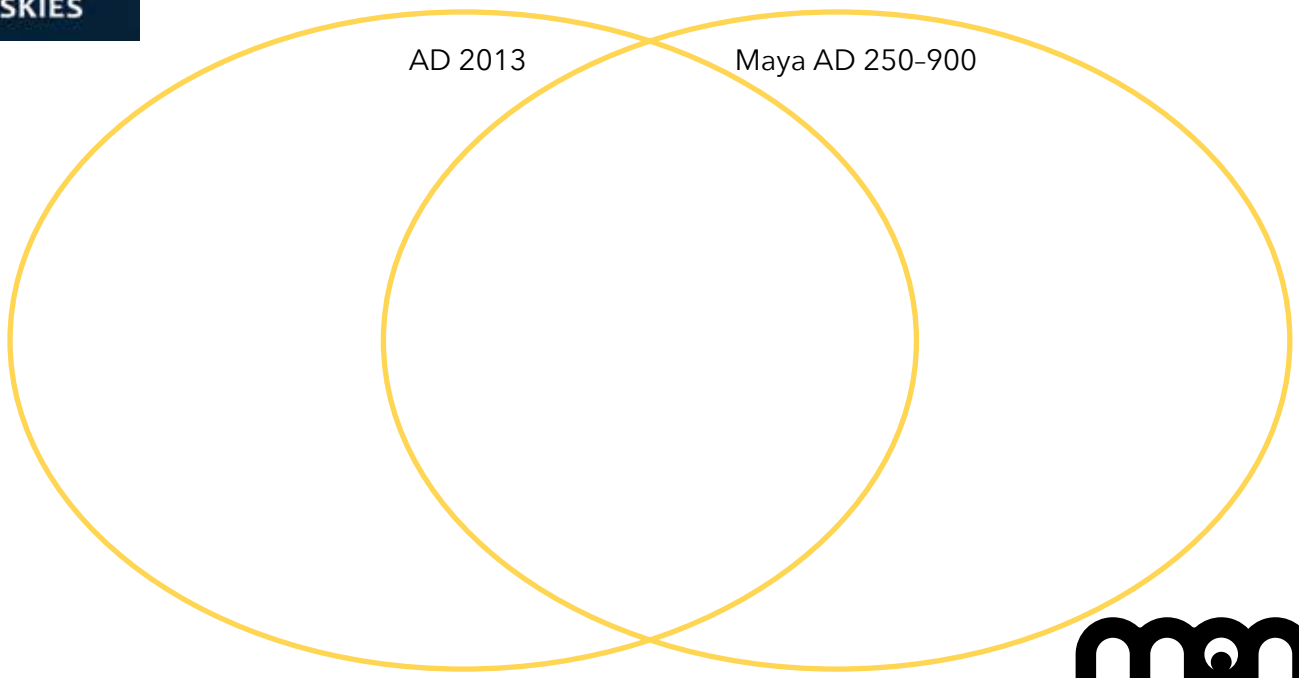
Where did he live? _____

When did he live? _____

Sketch a glyph from that object. What do you think that glyph might mean?

Watching the Skies

The Maya observed the movement of objects in the sky. Compare their experiences 1,000 years ago to ours today. What is different and what is the same? Use the Venn diagram to make notes.



Master Builders and Making a Living

Make notes to describe a city in the Maya region. When you get back to school, you will use your notes to write a travel blog.

Where is the city located? _____

Add details so that someone reading your blog would like to visit the place you describe! Here are some ideas; you can use these or use your own detail ideas.

- What is in the city?
- What do the buildings look like?
- Are there different buildings?
- Are there neighborhoods?
- How big is the city?
- What materials are used?
- Who lives here?
- What does the land look like?
- What kinds of food do people eat?
- What do people do for work? For fun?
- What would you do if you visited this city?

_____

_____

_____

_____

_____

_____

_____

Try out ***one*** of these activities: **Use a Tumpline** OR **Build a Corbel Arch**

Describe how it works.

What was this used for in the past?

What could you use this for in your life today?

How would you change it to make it better for your purpose?

Death and Rebirth/The Dead Tell Tales/A Story in Pictures

Archaeologists use objects to learn more about the past. Find artifacts in these sections that help you understand Maya life. Complete this chart with your notes.

(Hint: Unless there is one object mentioned, you can choose from many possibilities!)

Object	Location	Interesting fact or idea or observation
Torch holder	*CAVE, Belize*	
	CAVE in:	*Animal images are symbols of Maya beliefs. This one shows:*
Shells	*BURIAL, Belize*	
	BONAMPAK, Mexico	*This artifact shows that elite people used jewelry to show status.*

Sketch and describe a favorite object from this section.

(Use words that describe color, shape, texture, use of space, pattern, repetition, size.)

Maya Roots Run Deep

Describe one or two observations from the exhibition that provide evidence that:

• Maya people today have contact with people from other places and other cultures.

• Maya people today still value tradition.

MAYA INVESTIGATIONS (High School)

Find the title sign for each space in the *Maya* exhibition.

- On these pages, read the questions for that space.
- Take notes to answer the questions.
- Use the notes to write a complete answer to the question after you return to school.

Unlocking the Maya Past

There are many ways to learn about the "hidden worlds" of the Maya.

What scientific technologies and methods have been used to understand life 1,200 years ago?

_____

Keep track of other methods as you continue throughout the rest of the exhibition and list them here:

_____ _____

_____ _____

_____ _____

Histories in Stone

Find a story shown in a stone carving, artifact, or painting. There are many possibilities.

What is the name of this artifact?_____

What is the story? _____

Sketch one of the glyphs on this object.

What kind of information does this glyph provide?

_____

Write your own label for the object, adding the parts that you think are the most important.

_____

_____

_____

Are cities in the Maya region more like cities in the Roman Empire or Greek city-states?

Explain your choice: _____

_____

_____

Watching the Skies and Master Builders

In these two sections, consider this quote:

"Maya architects and planners combined their engineering skills with their religious understanding of the world. They organized their cities to reflect social values and reinforce political and religious power."

Find 3 examples that provide evidence for this statement.

	Example	**Evidence for which part of the quote?**
1.	_____	_____
2.	_____	_____
3.	_____	_____

Making a Living

How did the Maya use their environment?
Find an example for each of the categories.

	Example	**What part of the environment was used?**
Food	_____	_____
Clothing	_____	_____
Shelter	_____	_____
Other	_____	_____

Death and Rebirth/The Dead Tell Tales/A Story in Pictures

In these sections, look at exhibits, watch videos, and do activities to complete the chart.

Archaeologists use objects to learn more about the past. Find artifacts in these sections that help you understand Maya life during Classic times. Complete this chart with your notes.

Object	Where was this object used	Interesting fact or idea or observation

A Story in Pictures

Bonampak, occupied from 600–800 AD, was an important Maya city in what is now Chiapas, Mexico. Look at the reconstructed room, as well as the artifacts and activities.

Make sketches and/or notes that would help you tell a story of the elite class during Classic Maya times.

Maya Roots Run Deep

Describe one or two observations from the exhibition that provide evidence that:

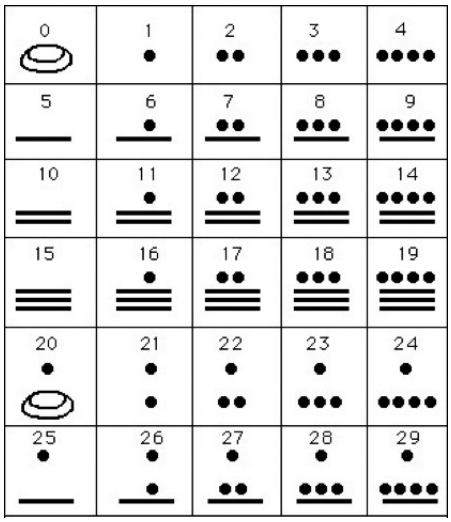
• Maya people today have contact with people from other places and other cultures.

• Maya people today still value tradition.

MAYA MATHEMATICS All Grades

As you explore *Maya: Hidden Worlds Revealed,* practice your understanding of Maya math. Write the numbers as Maya glyphs, unless the question mentions another way to answer.

Maya Math Key



Unlocking the Maya Past and Histories in Stone

Find a Maya number in any of the exhibits in this area.

Write the Maya number:

How would you write this number today? _____

Look at the stone stelae or other stone sculptures. How many king pictures can you find?_____

Watching the Skies

Look for Maya numbers in this section. What is the name of the artifact on which you found an example of Maya numbers?

Master Builders

Build a corbel arch. How many blocks did you use?

Ask a friend. How many did they use?

Making a Living

If you were a ballplayer, you would need to lift a ball that weighed ☐ pounds. Pick up the ball. Use Maya numbers for your answers.

How far do you think you could throw this ball? ☐ feet

A Story in Pictures

Try the bow drill. How many pieces make up a bow drill?

Draw a picture of the drill and label the parts.

A bow drill would be used to drill teeth for inlays. How many teeth in this section have these inlays?

CHAPERONE PAGE

- Encourage students to look closely at the exhibits, try the activities, and share their discoveries and ideas with the rest of the group.
- Enjoy the exhibits with your group! Share your own discoveries, questions, and "I wonder…"
- Allow time for student exploration. The suggestions below encourage exploration in the exhibition. Check with the teacher for their expectations.
- Teachers may have provided students with guiding questions or question sheets to use. Check with the teacher for your own copy.
- Please stay with your group throughout the exhibition.
- If you have questions, please ask any of the staff in the exhibition.

Look for the section intro signs to help with orientation:

Here are some questions to share with your group. Develop your own exploration questions too!

- Archaeologists have many ways to learn about the past. Find examples of different ways they have learned about the ancient Maya.
- How does Maya writing look different from our writing? How is it the same?
- In any area, ask students to find an interesting object to describe to the rest of the group. Can the others identify the object from their description? Take turns sharing descriptions throughout the exhibition.
- Find examples of traditions contemporary Maya keep that are similar to ancient traditions.
- Try one or many of the activities. Ask students to compare what they learned from this activity with the rest of the group.
- Read labels in Spanish and English. What words are similar in both labels?

AFTER YOUR VISIT Grades 3–5

Discuss student answers using suggestions below.

Students can also use notes from the field trip to write more complete answers, incorporating their observations and reflections.

Unlocking the Maya Past

Use your pencil to shade in the map at right where most of the Maya towns and cities were.

Use a map of Maya towns and cities to mark and label several cities. (One source is: http://mayagis.smv.org)

Histories in Stone

Look at the stone stelae or other stone sculptures. How many images of people can you find?

Draw a picture of one of them. Draw a picture of yourself in the same style.

Discuss what features of Maya style they used for drawing—compare to the pictures they saw in the reconstructed room at Bonampak (A Story in Pictures).

Watching the Skies

The Maya observed the movement of objects in the sky. Which ones were important to them?

Sun, Moon, Venus, Mars, stars. What objects in the sky are important to you? For us all? Why? e.g. Sun is source of energy for life, Sun & Moon movements organize the calendar we use today (the Maya also designed their calendar on the movement of important celestial objects). How do we use our calendar? Do you remember how the Maya use their calendar?

Master Builders

Caracol was a city in what is now the country of Belize. *Add Caracol to your outline map.*

Which of these gives *you* the most information about Caracol? Look at the exhibits in this section, then choose one. Explain why you chose the one you did.

☐ Map of the region _____

☐ Floor map *LiDAR* _____

☐ Small model of the "downtown" *Caracol elevation model*

Discuss student choices. What details does each type of model, map, or aerial photo show? How are the pros or cons of each?

What did the builders of Caracol need to build this city?

How did they change the land?

Write some ideas here:

Natural resources: stones, wood

Tools: tumplines, cutting tools, etc.

Human resources: workers

Compare student answers to ideas about what it takes to build a city today. (Same categories, different technologies)

Grade 4 How does a city change the land it is built on? What changes do you think the Maya people noticed over the years as the city got bigger?

Grade 5 Compare the monuments of the Maya to ones students know (e.g. Capitol, public monuments in Washington DC, etc.). How do they look different? Why do you think they built them differently?

Did the Maya use any natural resources to build the city? Which ones? Ask students to choose one natural resource and find out how the Maya used it to build homes, large buildings, stelae, monuments.

Resources: websites, books, look at the material the artifacts are made from

Try out one of these activities: Using a tumpline OR Building a corbel arch

Draw a picture of your choice (tumpline or corbel arch). Write a caption for your drawing.

What was this used for in the past?

What could you use this for in your life today?

Ask students to write a paragraph explaining their chosen activity, what it was used for in the past, and their idea of how they would use it. Illustrate the paragraph with their drawing, and add labels to the drawing to explain main features of the tumpline or corbel arch.

Making a Living

Imagine that you were living in this city/region about 1,000 years ago. Look around—find examples that show what your life might have been like. Add the examples to your notes in the questions below.

Discuss choices. What examples did they find to spark their ideas?

What kind of job would you do? Choose one—most Maya people may have had several of these jobs at the same time.

Choose one: ☐ farmer ☐ weaver ☐ shell artist ☐ scribe ☐ king ☐ ballplayer

Draw or describe your house:

What food would you eat? Find examples.

If you were doing activities on your own or with other members of your family, where would you go? What would you do?

Death and Rebirth and The Dead Tell Tales

Archaeologists study objects to learn about the past. Find artifacts in this section that help you learn more. Complete this chart with your notes. (Hint: Unless there is one object mentioned, you can choose from many possibilities!)

Object	Location	Interesting fact or idea or observation
Torch holder	*CAVE, Belize*	*varies (shows that people entered cave and needed light)*
Artifact with animal shown	*CAVE in name of country*	*This shows an animal from the region, it is a varies*
Shells	*BURIAL, Belize*	*varies*

Discuss: What objects from the student's life would tell future archaeologists the most about their life? What information could those future archaeologists understand from the objects the students chose?

Add to chart above: Find an object you like, tell where it is from, and add an interesting fact, idea, or observation.

A Story in Pictures

Look at all of the pictures that artists painted 1,300 years ago (about 800 AD). Find one item in a picture that tells you about life in that time and place.

What is the item you chose? _____

Discuss

What does that item tell you about life in that time and place?

Is there an *object* in this section that is similar to the *item in the picture*? YES NO

Ask pairs or groups of 3-4 students to write a narrative (archaeological interpretation) of life in Bonampak in about the year 800, then compare the versions. What evidence would help support your interpretation?

Maya Roots Run Deep

Think of photos or exhibits you saw that show something about Maya life *today*. It could be in this section or somewhere else in the exhibition.

What is the same as in the past?

What is different?

Discuss: What traditions does your family have? Did your grandparents have the same tradition? Has it changed since they were your age? If so, why do you think it changed?

What did you notice in the exhibits that was different for the Maya today compared to long ago? Why do you think those things changed?

AFTER YOUR VISIT Grades 6–8

Ask students to write complete responses to the At The Museum questions, based on their notes. Review their answers as appropriate. Discuss in class to share insights, reactions, and perceptions.

Additional follow-up discussions and extensions for exhibition reflection.

- If you could create an additional display or room for *Maya: Hidden Worlds Revealed,* what would it be? Why would you choose this focus? What would it include?

- Select one of the interactive activities. Describe what you did. Record 3 things about the Maya you learned as a result of the activity. List student choices, along with things they learned. In a class discussion, determine if there are things they learned that are common to everyone. Are some things unique to a student and their own personal experience?

- Make a Venn diagram to compare a Maya public building with a public building in the U.S. What features would make the buildings last centuries? What features would disintegrate?

- Write a travel blog description of one Maya city. Where is it located? Why do you think this was a good place for this city? Use the details you gathered at the Museum so that someone reading your blog would like to visit the place you describe!

  An example is shown below:

  On the banks of Lake Michigan is one of America's greatest cities: Milwaukee, Wisconsin. We caught a ride down through downtown Milwaukee and saw many of Milwaukee's important buildings, like the downtown library, the federal courthouse, and the Milwaukee Public Museum. We hopped off our ride and walked through Zeidler Union Square, a small piece of land donated to the city of Milwaukee in 1835 by some of the city's founding fathers.

- Describe the role of caves in the life of the Maya. Research caves in Wisconsin. Where are they located? This area is called "karst" topography. Are they similar to the caves in the Maya region?

- Discuss: What is the most interesting thing you have learned about the Maya culture?

- Think–Pair–Share: As an archaeologist working to understand more, what question would you pursue next? What parts of the exhibit would be most valuable for you to revisit?

AFTER YOUR VISIT Grades 9–12

Ask students to write complete responses to the At The Museum questions, based on their notes. Review their answers as appropriate. Discuss in class to share insights, reactions, and perceptions.

Additional follow-up discussions and extensions for exhibition reflection.

- What technologies or techniques that archaeologists use in the Maya region were new to students?

  Mentioned in the exhibition: epigraphy, rubbings, analogies with contemporary people, LiDAR (Light Detection And Ranging), lake cores and pollen analysis, chemical analysis of speleothem, infrared light

- How did the Maya use their environment?

  Review student answers. Discuss: How would this use of the environment have impact on the environment? How does this compare with current life? Did students find any evidence in the exhibition that indicates major changes in the type of environment throughout time? (There is an exhibit that shows a lake core of sediment and examples of pollen that show changes.)

Ask students to summarize their observations of the exhibition in response to the following categories:

– Social organization: Class structure and differences between class expectations and traditions

– Political organization: Was the structure similar to any political situations in the world today?

– Relationship of religious beliefs to other parts of life

– Artistic expression

– Changes over time in the Maya region

- Think-Pair-Share: As an archaeologist working to understand more, what question would you pursue next? What parts of the exhibit would be most valuable for you to revisit?

- If you could create an additional display or room for *Maya: Hidden Worlds Revealed*, what would it be? Why would you choose this focus? What would it include?

- Discuss: What is the most interesting thing you have learned about the Maya culture?

RESOURCES for Teachers and Students

Milwaukee Public Museum: *Maya: Hidden Worlds Revealed*

Milwaukee Public Museum: Maya: Hidden Worlds Revealed
Background on the exhibition and associated programs.

www.mpm.edu/maya

Caracol, a Maya city in Belize

www.caracol.org

Arlen and Diane Chase are archaeologists who have been working at Maya sites for over 30 years. Some of their research is highlighted in sections of the *Maya: Hidden Worlds Revealed* exhibition. Their website includes the main city of their research, Caracol, and includes current photos, videos and field reports, as well as this overview for young people.

Archaeology for Kids

www.caracol.org/kids/what_is_archaeology.php

Living Maya Time: Sun, Corn, and the Calendar

Includes sections about Maya people, past and present, locations of cities and population centers, worldview, the importance of corn, the Maya mathematical and calendar system, as well as further resources for educators. Developed by National Museum of the American Indian, Smithsonian Institution.

maya.nmai.si.edu

Very complete glossary of terms

maya.nmai.si.edu/sites/default/files/resources/site-glossary-en.pdf

Seeing Maya culture through examining a stela

This interactive website helps students understand several aspects of Maya art and culture (symbols, glyphs, mathematics, materials) through investigation of a stela in the DeYoung Museum's collections. Upper elementary and above.

deyoung.famsf.org/files/collectionicons/index1.html

Maya Glyphs

Maya glyph workbook

www.famsi.org/research/pitts/MayaGlyphsBook1Sect1.pdf

Background information about the Maya glyphs (as well as other scripts)

www.ancientscripts.com/maya.html

Maya Scribes

www.sfgate.com/news/article/Politics-of-the-ancient-Maya-rested-on-the-2896686.php

Wisconsin Academic Standards

The Milwaukee Public Museum provides a field trip destination that allows teachers and students to reinforce Wisconsin Academic Standards. Use of the materials in this guide in combination with a field trip to *Maya: Hidden Worlds Revealed* will help you link learning experiences to the following content standards.

Grades 3

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

Reading Standards for Informational Text 1-Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

Reading Standards for Informational Text 3-Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

Reading Standards for Information Text 7-Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Reading Standards: Foundational Skills 4-Read with sufficient accuracy and fluency to support comprehension.

Writing Standards 2-Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Language Standards 4-Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on grade 3 reading and content, choosing flexibly from a range of strategies.

WISCONSIN STANDARDS FOR SCIENCE (applies to Grades 3-5)

SCI.ESS1.B.5 The Earth's orbit and rotation, and the orbit of the moon around the Earth cause observable patterns.

SCI.ESS2.A.4, 5 Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around.

SCI.ESS3.A.4 Energy and fuels humans use are derived from natural sources, and their use affects the environment. Some resources are renewable over time, others are not.

SCI.ESS3.C.5 Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.

SCI.ETS2.B.3-5 People's needs and wants change over time, as do their demands for new and improved technologies.

SCI.ETS3.A.3-5 Science and engineering knowledge have been created by many cultures. People use the tools and practices of science and engineering in many different situations (e.g. land managers, technicians, nurses and welders). Science and engineering affect everyday life.

SCI.ETS3.B.3-5 Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding.

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN (applies up to Grade 4)

A.4.3 Learn about basic styles of art from their own and other parts of the world

A.4.4 Learn about styles of art from various times

A.4.5 Know that art is one of the greatest achievements of human beings

A.4.6 Know that art is a basic way of thinking and communicating about the world

B.4.1 Understand that artists and cultures throughout history have used art to communicate ideas and to develop functions, structures, and designs

B.4.2 Recognize that form, function, meaning, and expressive qualities of art and design change from culture to culture and artist to artist

B.4.3 Know that works of art and designed objects relate to specific cultures, times, and places

B.4.8 Learn that art historians, cultural anthropologists, and philosophers of art contribute to an understanding of art and design

D.4.3 Know that the environment influences the look and use of art, architecture, and design

G.4.1 Know that art communicates ideas

G.4.2 Know that artwork has meanings

J.4.3 Learn that different cultures think about art differently

J.4.6 Begin learning the value of art as a basic part of being human

J.4.8 Know that different cultures have different concepts of beauty

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES (applies to students up to Grade 4)

A.4.2 Locate on a map or globe physical features such as continents, oceans, mountain ranges, and land forms; natural features such as resources, flora, and fauna; and human features such as cities, states, and national boarders

A.4.4 Describe and give examples of ways in which people interact with the physical environment, including use of land, location of communities, methods of construction, and design of shelters

A.4.8 Identify major changes in the local community that have been caused by human beings, such as a construction project, a new highway, a building torn down, or a fire; discuss reasons for these changes; and explain their probable effects on the community and the environment

B.4.4 Compare and contrast changes in contemporary life with life in the past by looking at social, economic, political, and cultural roles played by individuals and groups

B.4.8 Compare past and present technologies related to energy, transportation, and communications, and describe the effects of technological change, either beneficial or harmful, on people and the environment

B.4.9 Describe examples of cooperation and interdependence among individuals, groups, and nations

C.4.1 Identify and explain the individual's responsibilities to family, peer, and the community, including the need for civility and respect for diversity

E.4.6 Give examples of group and institutional influences such as laws, rules, and peer pressure on people, events, and culture

E.4.8 Describe and distinguish among the values and beliefs of different groups and institutions

E.4.11 Give examples and explain how language, stories, folk tales, music, and other artistic creations are expressions of culture and how they convey knowledge of other peoples and cultures

E.4.13 Investigate and explain similarities and differences in ways that cultures meet human needs

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING (applies to Grades 3-5)

4C1.a.2.e Explain how human needs and desires drive innovation.

4C2.a.2.e Explain problems, decisions, and opportunities faced by individuals and communities.

CD1.c.4.e Describe what it means to show respect and appreciation for individual and cultural differences.

EHS1.a.1.e Recognize and describe various types of natural and human-built systems.

EHS1.a.2.e Describe how social, ecological, and economic systems have benefits and consequences.

EHS1.c.1.e Identify examples of how personal actions can influence social, economic and ecological systems

AC1.a.2.e Recognize that people live, work and go to school in buildings, which are of different types: houses, apartments, office buildings and schools.

AC1.h.1.e Recognize that all structures are constructed to meet the needs and wants of society.

ICT1.b.1.e Describe how people communicate with one another.

ICT1.c.1.e Describe what the difference is between graphic communications and verbal communication.

Grade 4

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

Reading Standards for Informational Text 1-Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text

Reading Standards for Informational Text 3-Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

Reading Standards for Information Text 5-Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

Reading Standards for Information Text 7-Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Reading Standards: Foundational Skills 4-Read with sufficient accuracy and fluency to support comprehension

Writing Standards 2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Language Standards 4-Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.

WISCONSIN STANDARDS FOR SCIENCE
See Wisconsin Standards for Science for Grade 3

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN
See Wisconsin's Model Academic Standards for Art and Design for Grade 3

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES
See Wisconsin's Model Academic Standards for Social Studies for Grade 3

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING
See Wisconsin Standards for Technology and Engineering for Grade 3

Grade 5

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS
Reading Standards for Informational Texts 1-Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

Reading Standards for Informational Texts 3-Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

Reading Standards for Informational Texts 4-Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.

Reading Standards: Foundational Skills 4-Read with sufficient accuracy and fluency to support comprehension.

Writing Standards 2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly

Language Standards 4-Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.

WISCONSIN STANDARDS FOR SCIENCE
See Wisconsin Standards for Science for Grade 3

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN
(applies to students up to Grade 8)
A.8.3 Know about styles of art from their own and other parts of the world

A.8.4 Know about some styles of art from various times

A.8.5 Demonstrate ways in which art is one of the greatest achievements of human beings

A.8.6 Identify ways in which art is basic to thinking and communicating about the world

B.8.1 Explore how artists and cultures throughout history have used art to communicate ideas and to develop functions, structures, and designs

B.8.2 Recognize ways in which form, function, meaning, and expressive qualities of art and design change from culture to culture and artist to artist

B.8.3 Identify works of art and designed objects as they relate to specific cultures, times, and places

B.8.8 Learn about the contributions of art historians, cultural anthropologists, and philosophers of art to our understanding of art and design

D.8.3 Know how the environment influences the look and use of art, architecture, and design

G.8.1 Know that visual images are important tools for thinking and communicating

G.8.2 Know how to find the meanings in artwork

G.8.3 Analyze the meanings of artworks and design

J.8.3 Learn ways different cultures think about art

J.8.6 Learn the value of art as a basic part of being human

J.8.8 Explore different cultures' concepts of beauty

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES
(applies to students up to Grade 8)
A.8.8 Describe and analyze the ways in which people in different regions of the world interact with their physical environments through vocational and recreational activities

A.8.9 Describe how buildings and their decoration reflect cultural values and ideas, providing examples such as cave paintings, pyramids, sacred cities, castles, and cathedrals

A.8.10 Identify major discoveries in science and technology and describe their social and economic effects on the physical and human and environment

B.8.8 Identify major scientific discoveries and technological innovations and describe their social and economic effects on society

B.8.10 Analyze examples of conflict, cooperation, and interdependence among groups, societies, or nations

D.8.2 Identify and explain basic economic concepts: supply, demand, production, exchange, and consumption; labor, wages, and capital; inflation and deflation; market economy and command economy;

public and private goods and services

E.8.5 Describe and explain the means by which groups and institutions meet the needs of individuals and societies

E.8.13 Select examples of artistic expressions from several different cultures for the purpose of comparing and contrasting the beliefs expressed

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING

See Wisconsin Standards for Technology and Engineering for Grade 3

Grade 6

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

Reading Standards for Informational Text 3-Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).

Reading Standards for Informational Text 7-Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

Writing Standards 4-Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Language Standards 6-Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

WISCONSIN STANDARDS FOR SCIENCE (applies to Grades 6-8)

SCI.ESS3.A.m Humans depend on Earth's land, oceans, fresh water, atmosphere, and biosphere for different resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes.

SCI.ESS3.C.m Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth.

SCI.ETS1.A.m The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions.

SCI.ETS2.B.m All human activity draws on natural resources and has both short and longterm consequences, positive as well as negative, for the health of people and the natural environment.

SCI.ETS3.A.m Individuals and teams from many nations, cultures and backgrounds have contributed to advances in science and engineering.

SCI.ETS3.B.m Science asks questions to understand the natural world and assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. Science carefully considers and evaluates anomalies in data and evidence.

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN

See Wisconsin's Model Academic Standards for Art and Design for Grade 5

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES

See Wisconsin's Model Academic Standards for Social Studies for Grade 5

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING (applies to Grades 6-8)

4C2.a.8.m Explain how implementation of a solution or action may affect one or more corresponding systems.

CD1.c.8.m Show respect and appreciation for individual and cultural differences in groups.

EHS1.a.5.m Describe the process of change, flow of energy and the importance of diversity in natural and human-built systems.

EHS1.a.6.m Compare ways in which social, ecological and economic systems have been managed.

EHS1.c.4.m Give examples of education, economic and governmental institutions' and individuals' influence on social, economic and ecological systems.

AC1.a.6.m Explain the function of foundations and why structures rest on a foundation.

AC1.h.5.m Describe historically that construction began to meet the basic need of shelter.

ICT1.b.5.m Analyze how communication can be initiated.

Grade 7

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

Reading Standards for Informational Text 3-Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).

Writing Standards 4-Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience

Language Standards 6-Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression

WISCONSIN STANDARDS FOR SCIENCE

See Wisconsin Standards for Science for Grade 6

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN

See Wisconsin's Model Academic Standards for Art and Design for Grade 5

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES

See Wisconsin's Model Academic Standards for Social Studies for Grade 5

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING

See Wisconsin Standards for Technology and Engineering for Grade 6

Grade 8

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

Reading Standards for Informational Texts 3-Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).

Writing Standards 4-Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Language Standards 6-Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

WISCONSIN STANDARDS FOR SCIENCE

See Wisconsin Standards for Science for Grade 6

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN

See Wisconsin's Model Academic Standards for Art and Design for Grade 5

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES

See Wisconsin's Model Academic Standards for Social Studies for Grade 5

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING

See Wisconsin Standards for Technology and Engineering for Grade 6

Grade 9

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS (applies to Grades 9-10)

Reading Standards for Informational Text 1-Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

Writing Standards 4-Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Language Standards 4-Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9–10 reading and content, choosing flexibly from a range of strategies

WISCONSIN STANDARDS FOR SCIENCE

SCI.ESS2.A.h Feedback effects exist within and among Earth's systems.

SCI.ESS3.A.h Resource availability has guided the development of human society and use of natural resources has associated costs, risks, and benefits.

SCI.ESS3.B.h Natural hazards and other geological events have shaped the course of human history at local, regional, and global scales.

SCI.ESS3.C.h Sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources, including the development of technologies.

SCI.ETS1.A.h Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them.

SCI.ETS2.B.h Modern civilization depends on major technological systems, such as agriculture, health, water, energy, transportation, manufacturing, construction, and communications.

SCI.ETS3.A.h Individuals from diverse backgrounds bring unique perspectives that are valuable to the outcomes and processes of science and engineering.

SCI.ETS3.B.h Science is both a body of knowledge that represents current understanding of natural systems and the processes used to refine, elaborate, revise and extend this knowledge. These processes differentiate science from other ways of knowing.

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN (applies to students up to Grade 12)

A.12.3 Know and recognize styles of art from their own and other parts of the world

A.12.4 Know and recognize many styles of art from various times

A.12.5 Explain that art is one of the greatest achievements of human beings

A.12.6 Use art as a basic way of thinking and communicating about the world

B.12.1 Demonstrate how artists and cultures throughout history have used art to communicate ideas and to develop functions, structures, and designs

B.12.2 Show ways that form, function, meaning, and expressive qualities of art and design change from culture to culture and artist to artist

B.12.3 Relate works of art and designed objects to specific cultures, times, and places

B.12.8 Know the contributions of art historians, cultural anthropologists, and philosophers of art to our understanding of art and design

D.12.3 Explain how the environment influences the look and use of art, architecture, and design

G.12.1 Use visual images as tools for thinking and communicating

G.12.2 Know how to find the meanings in artwork

J.12.3 Identify ways different cultures think about art

J.12.6 Know the value of art as a basic part of being human

J.12.8 Know concepts of beauty in different cultures

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES (applies to students up to Grade 12)

A.12.4 Analyze the short-term and long-term effects that major changes in population in various parts of the world have had or might have on the environment

A.12.5 Use a variety of geographic information and resources to analyze and illustrate the ways in which the unequal global distribution of natural resources influences trade and shapes economic patterns

A.12.8 Identify the world's major ecosystems and analyze how different economic, social, political, religious, and cultural systems have adapted to them

A.12.9 Identify and analyze cultural factor, such as human needs, values, ideals, and public policies, that influence the design of places, such as an urban center, an industrial park, a public project, or a planned neighborhood

A.12.11 Describe scientific and technological development in various regions of the world and analyze the ways in which development affects environment and culture

B.12.10 Select instances of scientific, intellectual, and religious change in various regions of the world at different times in history and discuss the impact those changes had on beliefs and values

D.12.2 Use basic economic concepts (such as supply and demand, production, distribution, and consumption; labor, wages, and capital; inflation and deflation; market economy and command economy) to compare and contrast local, regional, and national economies across time and at the present time

E.12.3 Compare and describe similarities and differences in the ways various cultures define individual rights and responsibilities, including the use of rules folkways, mores, and taboos

E.12.4 Analyze the role of economic, political, educational, familiar, and religious institutions as agenda of both continuity and change, citing current and past examples

E.12.6 Analyze the means by which and extent to which groups and institutions can influence people, events, and cultures in both historical and contemporary settings

E.12.10 Describe a particular culture as an integrated whole and use that understanding to explain its language, literature, arts, traditions, beliefs, values, and behaviors

E.12.13 Compare the ways in which a universal theme is expressed artistically in three different world cultures

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING (applies to Grades 9-12)

CD1.c.12.h Assess how respect and appreciation for individual and cultural differences impacts group processes.

EHS1.a.9.h Assess systems dynamics, including constant change and carrying capacity within social, ecological and economic systems.

EHS1.a.10.h Evaluate the societal, ecological and

economic costs and benefits of allocating resources in various ways.

EHS1.c.7.h Analyze political, educational, economic and governmental influences on systems and identify the roles individuals play within the systems.

AC1.a.10.h Analyze how structures are constructed using a variety of processes and procedures.

AC1.a.11.h The design of structures of structures includes a number of requirements.

AC1.h.9.h Explain significant historical trends in the construction industry.

Grade 10

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

See Wisconsin Standards for English Language Arts for Grade 9

WISCONSIN STANDARDS FOR SCIENCE

See Wisconsin Standards for Science for Grade 9

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN

See Wisconsin's Model Academic Standards for Art and Design for Grade 9

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES

See Wisconsin's Model Academic Standards for Social Studies for Grade 9

See Wisconsin Standards for Technology and Engineering for Grade 9

Grade 11

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

Reading Standards for Informational Text 1-Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

Writing Standards 4-Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Language Standards 4-Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.

WISCONSIN STANDARDS FOR SCIENCE

See Wisconsin Standards for Science for Grade 9

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN

See Wisconsin's Model Academic Standards for Art and Design for Grade 9

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES

See Wisconsin's Model Academic Standards for Social Studies for Grade 9

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING

See Wisconsin Standards for Technology and Engineering for Grade 9

Grade 12

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS

See Wisconsin Standards for English Language Arts for Grade 11

WISCONSIN STANDARDS FOR SCIENCE

See Wisconsin Standards for Science for Grade 9

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR ART AND DESIGN

See Wisconsin's Model Academic Standards for Art and Design for Grade 9

WISCONSIN'S MODEL ACADEMIC STANDARDS FOR SOCIAL STUDIES

See Wisconsin's Model Academic Standards for Social Studies for Grade 9

WISCONSIN STANDARDS FOR TECHNOLOGY AND ENGINEERING

See Wisconsin Standards for Technology and Engineering for Grade 9