

FROM THE GROUND UP

archaeology | artisans | everyday life



This guide provides a framework for preparing you and your students to visit the Museum of American Glass 2016 exhibitions *From the Ground Up: Archaeology, Artisans, Everyday Life* and *Mine Moonlight: Artists Working in the River Wards*. It also offers suggestions for classroom follow up, reflection, activities, and lessons. This guide has been created for pre-school, elementary, middle-school, high-school, and college students. Please feel free to adapt and build upon this material to meet your teaching objectives and your students' needs.

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Left: Archaeologists sorting through sherds of glass at the Dyottville Glass Works Site.
Right: Archaeologists carefully excavating a Native American site.

HOW TO USE THESE MATERIALS

PURPOSE

Our goal is to inspire students to look closely at the artifacts and artwork in the exhibitions and the Museum's permanent collection, and to expand their engagement and understanding of related themes and concepts. The materials in the guide can be used as an introduction to the exhibitions or as a springboard to an in-depth exploration of the artifacts and how they represent the time and cultures in which they were made.

TEACHER PREPARATION

Information presented in the introduction section will be helpful to review before beginning the activities in this guide. Pre- and post-visit classroom activities and projects are suggested to allow for a deeper look and discussion of themes present in the exhibitions. We encourage you to incorporate these materials and activities into your classroom and modify them as needed. You may copy and distribute any of the images or worksheets presented in this guide for educational use.

HANDS-ON WORKSHOPS AT WHEATONARTS

If you plan to visit our campus, please take note of the two hands-on workshops we offer, Mystery Bag Sculpture and Sugar Casting. Reservations are required and must be made at least two (2) weeks in advance. Please call 856-825-6800, ext. 100, or send an email to mail@wheatonarts.org for availability. Additional fees apply.

LEARNING STANDARDS

The activities presented in this teacher's guide meet the national and state learning standards for the arts, language arts, social studies, and history.

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INTRODUCTION

From The Ground Up *archaeology | artisans | everyday life*

In 2009, the Federal Highway Administration and Pennsylvania Department of Transportation began a long-term project to improve and rebuild a three-mile section of Interstate-95 in Philadelphia. The construction parallels the Delaware River and passes through three historic neighborhoods: Northern Liberties, Kensington-Fishtown, and Port Richmond. The National Historic Preservation Act of 1966 requires the completion of archaeological investigations when construction projects receive federal funding. AECOM's cultural resources office in Burlington, New Jersey, is identifying and researching important archaeological sites on behalf of these agencies. AECOM brought the exhibition to WheatonArts because the archaeological excavations and related research revealed close ties with New Jersey, particularly the South Jersey glass industry. Also, WheatonArts provides live demonstrations of the processes used to create many of the artifacts.



The I-95 project passes through three historic neighborhoods in Philadelphia. The artifacts in the exhibition were primarily excavated from Kensington-Fishtown and Port Richmond.

The ongoing excavations are among the most extensive archaeological investigations ever conducted in this region. Approximately one million artifacts have been recovered. Dating from almost 3600 B.C. to the early 20th century, these artifacts provide a remarkably rich and detailed record of life along the Lower Delaware River. Once inhabited by the Lenni Lenape (Delaware) Indians, this area remained sparsely populated, with only a little industry until the end of the 18th century. Then immigrants from England, Ireland, Germany, and Poland settled along the waterfront to work in various trades, including fishing, shipbuilding, glassmaking, and textiles. Many of the artifacts, largely recovered from backyard privies (outhouses), were made by skilled artisans—Native Americans, potters, and glassblowers—who used the natural resources of the region to make what they needed.

From the Ground Up raises awareness of the role archaeology plays in preserving and interpreting this past, and weaves a story of everyday life that explores the ongoing connections between artisans in Philadelphia and South Jersey. It includes Native American artifacts and locally manufactured ceramics, including stoneware, yellow ware, and Rockingham. The exhibition highlights the glass industry that once thrived in historical Kensington and features a large variety of 19th-century glass whimsies, bottles, and tableware. Additional artifacts dating from the late 18th to early 20th century provide insight into how families living along the waterfront prepared and served their food, lit their homes, cared for the sick, fed their children, and addressed personal and social issues that are still relevant today.

Mine Moonlight: Artists Working in the Riverwards

By the mid-20th century, the I-95 project area was heavily industrialized and Philadelphia had earned the title of the “Workshop of the World.” As in other American cities, these neighborhoods eventually suffered from deindustrialization and urban decay. Today, as the waterfront is being revitalized, many artists and young families are moving into the area and embracing the local cultural history. To complement the exploration of the past, WheatonArts invited ten artists from these neighborhoods to participate in *Mine Moonlight: Artists Working in the Riverwards*. Their work speaks to the history and culture that gives these communities a sense of place.

Explore AECOM’s interactive report, *Digging I-95*, at www.diggingi95.com to learn more about the I-95 archaeological excavations and see videos about glassmaking.

Glassmaking in Kensington

Historically, glass factories were established along waterways not only to get the necessary raw materials to the factory, but also to carry the fragile glass products to market. Water provided a much smoother ride than rough, unpaved roads. A glass factory was established on the Delaware River in Kensington, north of a winding creek called Gunner's Run, in 1771. Another factory was established between the first factory and Gunner's Run in 1816. This factory eventually became the Dyottville Glass Works. Eventually, at least seven factories were located in the area. Most of these glasshouses produced bottles, jars, and extremely large bottles called demijohns. One factory, Union Flint Glass Works, produced more lead (flint) glass tableware and lighting. Some of the glassblowers who worked in these factories were itinerant. They traveled back and forth between Kensington and South Jersey, working where they could find the best conditions and wages.

Glassmaking in South Jersey

Caspar Wistar and German glassworkers established the first truly successful glass factory in America near Alloway in Salem County, New Jersey. South Jersey had an abundance of pure white sand and became a major glass manufacturing center. Most of the factories produced bottles and windows. After 1860, the glass industry was well established in New Jersey, utilizing the state's abundant natural resources. By the 1880s, the number of factories grew to sixty-five. Primarily located in the southern part of the state, they continued to focus on manufacturing bottles and window glass. Only a handful of glassworks produced pressed tableware and, due to the popularity of rich cut glass in 1900, over forty businesses operated cutting shops. Nearly every factory gave their glassworkers the opportunity to make personal items at the end of the day when their quota was complete. Many South Jersey glassblowers became legendary for the glass they produced on their own time.

With the introduction of the automatic bottle-blowing machine in 1903, the glass industry began to change. By 1915, many glass factories in New Jersey were automated, eliminating the need for skilled glassblowers. Smaller plants that could not compete with machines closed, while others merged into large combines. The opportunity for glassworkers to create their own glass was virtually eliminated. By the 1930s and 1940s, several small factories opened to produce hand-blown glass and kept the traditional glassblowing skills alive. Individual glassmakers built backyard shops and created their own glass. Others banded together, formed clubs, and blew glass on the weekends. Altogether, there were over 225 glass factories that operated in the state of New Jersey, more than any other state in the nation. Today, only twelve facilities melt their own glass. However, the tradition of creating personal glass is still very much alive, carried on by contemporary artists who have built their own glass studios in New Jersey.

MUSEUM CONNECTIONS

If you plan to visit the museum to view the exhibitions *From the Ground Up: Archaeology, Artisans, Everyday Life* and *Mine Moonlight: Artists Working in Philadelphia's River Wards*, you may want to see examples of similar glass in our permanent collection. Below is a list of items that are similar to those found during the excavations in the historical neighborhoods of Kensington-Fishtown and Port Richmond.

COLLECTION OBJECTS

THE EARLY GLASS ROOM

Compare to blown hollowware in the exhibition

- Jar. American, early 19th Century (#12)
- Small Bowl. Probably South Jersey, early 19th Century (#13)
- Mustard Pot. Probably South Jersey, early 19th Century (#14)
- Small Bowl. American, early to mid-19th Century (#21)
- Pitcher. Probably James Lee Glass Works, Millville, NJ, or James Lee Glass Works, Port Elizabeth, NJ, 1808–1809

BOTTLE ROOM

Compare to Flint Glass in the Union Glass Works case in the exhibition

- Bottle. Blown-Three-Mold, Keene/Marlboro Street Factory, Keene, NH, c. 1830
- Decanter. Keene/Marlboro St. Glass Works, Keene, NH, 1820s–1840s
- Stopper. Blown-Three-Mold, Acorn, maker unknown, 1820s–1840s
- Flip (Large Tumbler). New England, 1820s–1830s
- Pitcher. Blown-Three-Mold, Horn of Plenty, Boston and Sandwich Glass Co., Sandwich, MA, 1825–1835
- Salt. Pressed. Jersey City Glass Co., Jersey City, NJ, c. 1827

Compare to flasks in the Dr. Dyott and Samuel Huffsey cases in the exhibition

- Figural Bottle. Cumberland Glass Works, Bridgeton, NJ, date unknown
- Bottle. Indian Queen Bitters, "Brown's Celebrated Indian Herb Bitters Patented Feb. 11, 1868," attributed to Whitney Glass Works, Glassboro, NJ, 1868
- Flask. Isabella Glass Works, New Brooklyn, NJ, c. 1860

Compare to Whimsies in the exhibition

- Blown-Three-Mold Hat. Maker unknown, 1820–1830

WHIMSIES: LOCATED IN AREA 5, CHANGING EXHIBITS

Compare to Whimsies in the exhibition

- Hats
- Hobnail Hat. Duncan & Miller Glass Co., Washington, PA, c. 1940
(located in Art Nouveau)
- Fenton Art Glass Co. Williamstown, WV, 1940s
(located in Art Nouveau)

PRESSED AND CUT GLASS

Compare to objects in the Daily Life section of the exhibition

- Drawer Pulls. Probably Boston & Sandwich Glass Co., Sandwich, MA, 1840–1850

RELIGIOUS GLASS

- Crucifix Candlestick. Maker unknown, c. 1860

- Crucifix Candlestick. Boston & Sandwich Glass Co., Sandwich, MA, 1840s–1860s

CHILDREN'S GLASS

- Toy Tumblers. Boston & Sandwich Glass Co., Sandwich, MA, 1830–1850

- No. 6 Mug. Gillinder & Sons, Philadelphia, PA, 1876–1885

- Two Birds (mug). Maker unknown, c. 1890

- Mug. United States Glass Co., Bryce Brothers Factory, Pittsburgh, PA, 1890s

- Mug. Maker unknown, c. 1900

Political Glass

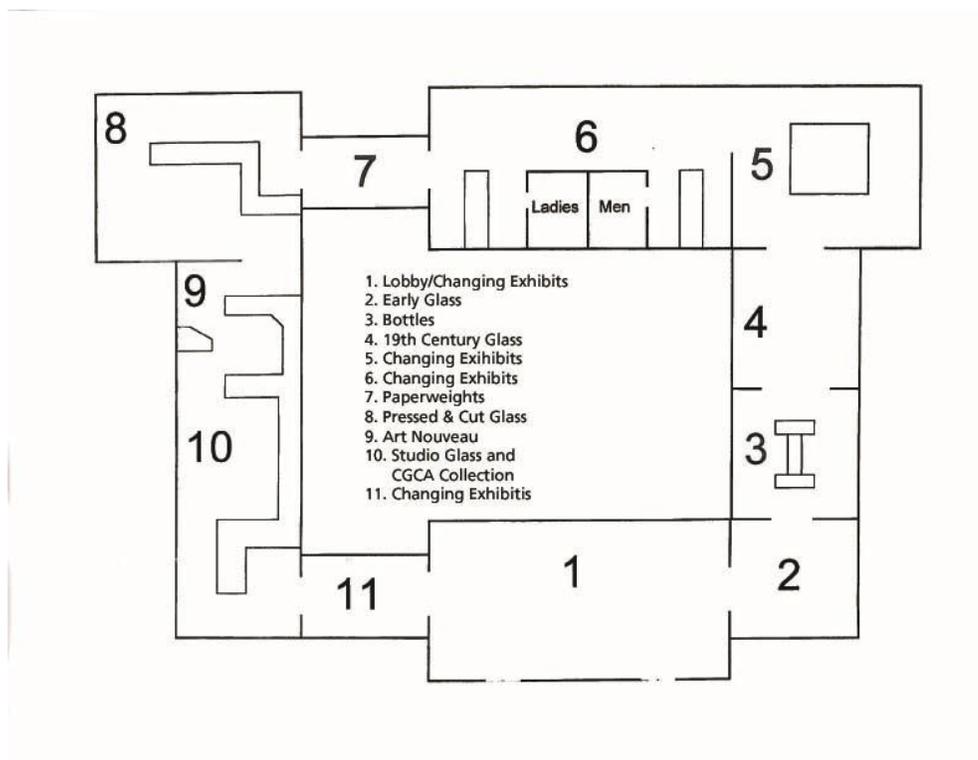
- Grant Peace Plate. Probably Adams & Co., Pittsburgh, PA, c. 1885

- Bust of Admiral George Dewey. Maker unknown, c. 1898

- Strawberry Diamond and Fan. C. Dorflinger & Sons, White Mills, PA, c. 1890

STUDIO GLASS AND CGCA COLLECTION

-Woo Mee Suh, Figurative Sculpture, CGCA Fellow, 1992



KEY TERMS for ARCHAEOLOGY

archaeology

The study of human culture through the recovery and analysis of the things people made and used.

artifact

Any object made, shaped, or modified by people, or as a result of human activity.

catalog (noun or verb)

A list and description of all of the artifacts excavated at a site.

context

The soil layer and particular spot where an artifact was found and other artifacts were found with it.

hollowware

Vessels, such as bowls, cups, or vases—usually made of pottery, glass, or metal—that have a significant depth and volume.

“in the field”

The time that archaeologists spend excavating artifacts, as opposed to working in the lab or doing research.

material culture

The physical objects, resources, and spaces that people use to define their culture, including homes, cities, schools, churches, tools, household objects, etc.

mend

To fit together broken fragments of an artifact, such as a pottery vessel.

primary sources (aka original source)

An artifact, document, recording, or other source of information created at the time under study.

privy (outhouse)

An outdoor toilet. It is a shaft or hole dug into the ground and lined with wood, stone, or brick. The shaft is covered with a small building featuring a seat, usually a wooden bench, with at least one large hole.

projectile point

A stone that has been shaped to serve as the point of a spear or an arrow.

sherd (shard)

A piece of broken pottery or glass.

strata (plural for “stratum”)

Layers in the ground where *artifacts* or *features* are found within a site. (The singular is “stratum.”) Strata can be natural (laid down by wind, water, or other natural means) or cultural (moved around or deposited by people, such as in land fill or privy shaft deposits).

KEY TERMS for GLASS AND CERAMICS

cut glass

Glassware that has been decorated by carving a design into the surface using large rotating wheels, traditionally made of iron, stone, wood, and sometimes cork. The process progresses from roughly cutting, to smoothing, then polishing a design.

mold-blown glass

Glassware created by inflating a gather of molten glass in a mold. The glass is forced against the inner surfaces of the mold via gravity and air blown into the blow pipe. The glass assumes the shape and any decorative elements carved into the mold.

pressed glass

Glassware formed by placing a gather of molten glass in a metal mold and pressing it with a metal plunger to form the inside shape. The object has an interior form independent of the exterior, in contrast to mold-blown glass, whose interior corresponds to the outer form. The process of pressing glass was first mechanized in the United States between 1820 and 1830 (*Corning Glass Dictionary*).

salt glazing

A ceramic firing process during which salt is introduced into the kiln during the higher temperature portion of the firing cycle. Sodium from the salt reacts with the silica in the clay body to form a glassy coating of sodium silicate. The resulting surface is translucent and orange-peel-like in texture.

studio glass

A term popularized in the 1960s for unique or limited-edition objects designed and made in a studio rather than a factory, often, but not necessarily, by the same person (*Corning Glass Dictionary*).

Whimsy (end-of-day object)

An object made by a glassworker on his own time. Whimsies were often made from the molten glass that remained in the pot at the end of the day.

FROM DIG TO DISPLAY

Selecting the Site

Archaeologists usually find Native American sites close to water. Historical sites are determined by old maps and other research. Sometimes, the excavation site depends upon where construction will take place. Archaeologists monitor the construction activity to see if something important is found when the work is ongoing.



Excavating and Processing at the Site

While excavating the site, archaeologists record the “context”—soil layer and exact spot where an artifact is found. Artifacts from the same context are bagged together and documented in the field.



Artifact Analysis in the Lab

Washing, Sorting, and Marking

All of the artifacts from the same context are carefully washed and sorted into groups that appear to match. Each individual sherd is considered an artifact and is marked with a “field specimen” number.



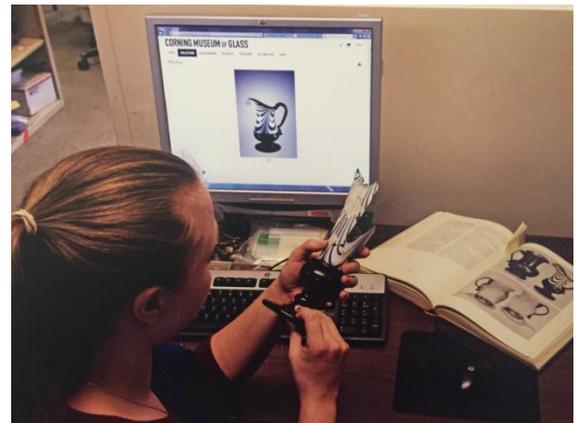
Mending Ceramics and Glass

Artifacts (sherds) are mended together. They are initially taped together in hopes of finding enough sherds to make an object complete. Eventually, the object is glued together. The glue can always be reversed if more sherds of the same object are found.



Research, Cataloging, Analysis, and Interpretation

Each artifact is cataloged in a database. Part of this process is determining what the object was and how it was used in the past. This effort requires careful research and comparison with objects in museum collections.



Storage or Display

Artifacts are preserved and stored according to museum standards or displayed in exhibitions to help the public understand the past.



ARTIFACTS FROM THE EXHIBITION

The following pages contain images of a sampling of artifacts in the exhibition, which serve as primary sources within this field of study. Primary sources include original artifacts, documents, and testimonies that provide firsthand information on an event or time period in history. The use of primary sources exposes students to important historical concepts. Through primary sources, students experience a direct connection to the lives of people in the past.

As students begin to understand the meaning of primary sources, they learn that textbooks and other secondary sources often present only one interpretation of the past. This realization and access to primary sources empower students to form their own interpretation of history, which can lead to insightful debates with teachers and classmates concerning the way material is presented in various sources. They will learn to challenge others' conclusions and seek out evidence to support their own. The classroom will become a lively arena in which students test and apply important analytical skills.

Additionally, by participating in group activities in which primary source materials are discussed, students will learn to analyze and evaluate contemporary sources, such as newspaper reports, television and radio programs, and advertising. Students will learn to recognize how a point of view and bias affect evidence, what contradictions and other limitations exist within a given source, and to what extent sources are reliable. This promotes higher-order thinking and enhanced critical thinking and analysis skills.

Archaeologists use period newspapers, diaries, census records, city directories, and many other documents to understand the past. They also use old wholesale and retail catalogs, business records, and other documents to understand the artifacts—the material culture—of the past.

Primary Sources: Suggested Discussion Questions

These questions can be presented in the classroom or during your visit at WheatonArts. Allow at least one minute of silent observation for each object. Ask the following questions:

Initial observation/impressions:

- What do you see?
- What do you notice first about this piece?
- What material/s is it made of?
- How big or small is this piece?

Putting the piece in context:

- Who created this piece?
- When was it created?
- What was happening during the creation time period?
- Why did the maker create this piece?
- How do you think it was used in daily life?
- Who was this meant for?

Personal responses:

- What feelings and thoughts does the piece trigger in you?
- What questions does it raise?
- Do you use a similar object in your daily life?

Serenading Moon Man, c. 1900



Serenading Moon Man. Bisque porcelain figurine excavated along I-95 in Kensington, made by the Schafer and Vater Porcelain Factory in Rudolstadt, Thuringia, Germany, c. 1900.

This figurine formed of bisque (unglazed) porcelain and measuring only 4.2 inches tall was found during excavations along the I-95 corridor in Kensington. The large moon head, exaggerated facial features, and costumed human body give the figure a cartoon-like quality. Although it does not have a manufacturer's mark, this moon man matches examples made by the Schafer and Vater Porcelain Factory in Rudolstadt, Thuringia, Germany. It was part of a series featuring moon men and sun head women in various romantic and leisurely poses. Small figurines like this one were common mantle or shelf ornaments in the late 19th through early 20th century.

Blown Glass, Early to Mid-19th Century



Pitcher, two flasks, vase, bottle, wine glass, closure, hat whimsy.

In the 19th century, American glass factories produced bottles and flasks in a variety of colors. Glassblowers sometimes used bottle glass to make other household objects, such as pitchers and vases. They also made whimsies like the hat seen here. The egg-shaped artifact was probably used in the top of a pitcher or another type of vessel as a closure.

Kirschenmann Bottle Hat (two views), Late 1850s



This hat was shaped from a porter bottle embossed with "J. M. KIRSCHENMANN / 485 / GER^N ROAD / PHILAD^A" on one side and a hollow block "K" on the other. The combination of city directory research and features of the bottle indicate that this particular mold was likely being made in the very late 1850s for John M. Kirschenmann, who owned a "Beer House" at 485 Germantown Road in Kensington. Of the seven types of bottles bearing Kirschenmann's name, five have manufacturer's marks from the Dyottville Glass Works. This example was found just a stone's throw from the Dyottville factory.

Cobalt Blue Decorated Cake Pot and Pitcher, 1870s



The Remmey family in Kensington made this type of salt-glazed stoneware in the 1870s, but we cannot say for sure that they produced these. Stoneware pottery is fired to temperatures between 2,200°F and 2,500°F. Common salt is introduced into the kiln once the firing temperature is high enough to vaporize it. The sodium in the salt combines with silica or alumina in the clay to create a glassy, glazed surface that covers the pottery.

Potters working at WheatonArts make salt-glazed stoneware. Visit the pottery studio to learn more.

Gorget, A.D. 800–1550



This artifact, called a gorget (approximately 2.5 inches long), represents an ornamental piece that Native Americans attached to clothing or wore as a sort of pendant or necklace. Manufactured from ground slate, this artifact features two hand-drilled holes and a series of incised geometric designs on one side. Native Americans may have used gorgets for several different purposes. They could have been objects of importance that represented tribal symbols or insignia, or perhaps served as charms believed to contain certain earthly and supernatural powers. This particular specimen was recovered from the I-95 project along the Delaware River in the Port Richmond section of Philadelphia. Though Native Americans made gorgets for many thousands of years, this artifact most likely dates to the Late Woodland culture period (circa A.D. 800–1550.) and might be associated with local Lenape—or Delaware Indian—tribes. The incised design is similar to decorations found on prehistoric pottery from the Delaware River watershed, and may represent a fishing community.

Jack's Reef Pentagonal Projectile Point (two views), A.D. 400–1000



Commonly known as “arrowheads,” these are the most diagnostic and identifiable of Native American artifacts. Projectile points were attached, or hafted, to the wooden shafts of atlatl (spear-thrower) darts, spears, or arrows. The sizes and shapes of projectile points changed over time, making these artifacts useful for determining the approximate age of sites in which they are found.

PRE-VISIT ACTIVITIES

This section presents a variety of in-classroom activities that will help you and your students explore and discuss some of the ideas and themes in the exhibition. Please see the section on artifacts from the exhibition on pages 12–18. You may want to share some of these images with your students prior to their visit, as they may help spark a discussion of expectations and help the students connect to the exhibit in a meaningful way.

Objectives:

- Introduce the students to the I-95 project.
- Spark a discussion on why history is meaningful and why we work to preserve and learn from it.
- Introduce students to the themes they may encounter during their visit.

Activity Set 1: You Are Here

In these map-interactive, discussion, writing, and presentation-based activities, students use maps and history to get a sense of how the geography of a region dictates the industries that are established there. Review the information in the introduction section that speaks about the glass industry in New Jersey and Philadelphia.

Geography and Maps

Pre-K (Ages 3–5), Elementary School (Grades K–4; Ages 5–10), Middle School (Grades 5–8; Ages 10–14)

Show your students the map of Millville featuring the glass factories. Have them locate the glass factories and circle them in a bright color. Ask them to locate their neighborhood.

- How many glass factories were found?
- Do you live close to where a glass factory once stood?
- Could you have walked to work if you were a glass factory employee?

Provide them with the “Making Glass” worksheet. Have them identify natural resources that would be helpful to glassmaking (such as forests, trees, rivers, and streams).

- Why were so many glass factories located in Millville?
- Are there other towns/cities in New Jersey that have the natural resources to support glassmaking?

Writing and Presentation

High School (Grades 9–12; Ages 14–18), College

Guide your students through the previous exercise. Create a special focus on how the geography of a region could dictate the industries that are established there. Highlight the connection between natural resources and industry.

Project: Either in groups or as individuals, ask your students to choose a city/region. You can choose to limit the project to a national or global scope. Have each group or student create a report and presentation of their chosen region, the natural resources it contains, and the related industries. Are there connections? Does the natural landscape support the industries?

Activity Set 2: Visual Literacy

We are surrounded by images in our everyday lives, via newspapers, television, magazines, advertising, art, and the Internet. Therefore, the ability to observe, understand, interpret, and communicate what we see is an important skill. Images contain information and ideas, presented by the maker. Visual literacy allows a viewer to observe and comprehend what is being presented, then place the image in a context, and ultimately have a response.

Woodcut Views of New Jersey

Middle School (Grades 5–8; Ages 10–14), High School (Grades 9–12; Ages 14–18), College
Show and discuss the woodcuts of Millville landscapes.

- Ask students to describe what they see. Does the image have trees? Buildings? Water?
- What is the medium used? Is it a painting? Drawing? Digital image? Print?
- Does the medium create a mood? Do the colors used create a mood? What mood do they create?
- How is space used in the image? Does the space seem cluttered, busy, open, or empty?
- Which of the following elements most strongly captures your attention when viewing this image: color, line, shape, texture, space, etc.? Describe how or why.
- What does the image tell you?
- What questions does it raise in your mind?
- What does it say about the time it was created?
- Can they determine when the image was created?
- Is this contemporary?

Historical vs. Contemporary: An Art Making Activity

High School (Grades 9–12; Ages 14–18), College

Have each student choose a historical depiction of a landscape, building, etc. These can be found in the resources section of this teachers' guide or students can find examples online.

- Ask the students to create a contemporary drawing or painting of the image they chose. Have each student present their rendering/painting next to the historical depiction.
- Ask the students to compare and contrast their two images. What is the same? What is different?

Life Then vs. Life Now: What Objects Tell Us About the Past

Elementary School (Grades K–4; Ages 5–10), Middle School (Grades 5–8; Ages 10–14), High School (Grades 9–12; Ages 14–18)

The findings resulting from the archaeological process allow us to discover how people lived many years in the past. Ask students to look at the artifact examples in the worksheet "Objects of Past and Present."

- What do they think each one was used for? Do they use similar objects?
- Ask them to bring in photographic examples of 3–4 objects that an archaeologist might find near their home one hundred years from today.
- Ask students to divide into pairs. Have them swap photographic examples and write or present what those objects say about the daily life of their partner.

POST-VISIT ACTIVITIES

The following activities are recommended as in-classroom activities that will help you continue the exploration of the themes and ideas you may have learned about during your visit.

Objectives:

- Have students further explore some of the ideas and themes they learned about in the exhibition.
- Provide a springboard for students to express what they have learned in a variety of disciplines, such as writing, art making, and storytelling.

Activity Set 3: Observation and Objects

What can you learn from an object? What stories do the objects tell? Through observation of objects, we form a greater understanding of history and ourselves. Our personal history and experiences influence our interpretations. In a museum, and in the field of archaeology, artifacts are studied, put into a historical context, and interpreted.

Story Building: A Creative-Writing Exercise

Elementary School (Grades K–4; Ages 5–10), Middle School (Grades 5–8; Ages 10–14), High School (Grades 9–12; Ages 14–18)

Archaeologists use their findings to build a story of what life was like in the past. In this activity, students will exercise their creative-writing skills by using image cards to build a story.

- Show your students the story-building image cards, found in the worksheet section. Each group of students should be given a complete set of the same cards.
- Ask each group to create a story using the images on the cards.
- After each group finishes their story, ask them to present it to the class.
- Discuss the differences and similarities between each group's story.

Communicating the Visual Language: An Art Making Exercise

Elementary School (Grades K–4; Ages 5–10), Middle School (Grades 5–8; Ages 10–14), High School (Grades 9–12; Ages 14–18)

This activity is an exercise in observation and communication of visual language. Within many professions, the ability to describe what one sees or describe what one envisions is a vital skill. Archaeologists use fragments of artifacts and sometimes written accounts about the appearance of objects to draw or construct replicas of complete old objects.

- Group your students in pairs.
- Find objects or images of objects, art works, etc. that are not too difficult to draw.
- One student will describe the object from the image and the other will sketch. It is important that the student who is sketching does not see the image the other is describing and vice versa.
- Once each group is done, they can share their original image and sketch with the class.
- Have the students compare and contrast the two images. What is similar? What is different?
- Which elements of the original picture were challenging to describe? Why?

Activity Set 4: A is for Archaeology and Art

Pre-K (Ages 3–5), Elementary School (Grades K–4; Ages 5–10)

This activity teaches students how the tools of social science inquiry (e.g., buried art objects) can be used to investigate a culture of the past. Students will learn how to carefully and methodically dig to uncover artifacts. Once they discover their artifacts, they will learn how archaeologists mend the pieces to recreate the original piece. All activities will be documented in a dig report.

Art Activity: Creating the Artifacts (optional)

In this step, students use air dry clay to create a clay tile.

- Each student should receive a one- to two-pound ball of clay.
- The ball should be rolled into a flat disk, cut into a shape, and then decorated. Students can choose to carve, stamp, or add clay to their tiles to create a design, or they can keep the tile smooth and draw a design after the clay is dry.
- Before the tiles dry, students should use plastic knives to cut the tile into multiple pieces, similar to a puzzle. It is important to not make too many or too little pieces. The goal is to be able to reassemble the pieces.
- After the tiles are dry, students can add color using acrylic paints.

Archaeological Activity

In this step, students learn the archaeological process by methodically charting their excavation site, carefully uncovering artifacts, and recording their findings.

- Provide each student with an aluminum foil baking pan that is about 13x 9 x 4 inches. Fill the pan with soil and have each student bury their artifacts. These can be the tiles they created or other found objects.
- Each student should then switch with another student.
- Using masking tape and string, the students will create quadrants.
- Using excavation tools (tooth brushes, paint brushes, spoons, etc.) students should carefully remove the soil to uncover the buried objects. Explain to them that just like real archaeologists, they must carefully remove the soil so the buried artifacts do not break.
- Ask each student to record their findings using the artifact log sheets.

Activity Set 5: Objects in Our Daily Lives

Material culture refers to the physical objects and spaces people use, their relationship with those objects, and how those objects define their culture.

Your Objects: A Journaling Exercise

Middle School (Grades 5–8; Ages 10–14), High School (Grades 9–12; Ages 14–18)

- Ask the students to consider what they own. Ask them to record the objects they use, the spaces they occupy, and the way in which they use these objects and spaces over a one-week period.
- After the one-week period, students will write a summary entry: If they could keep only five things, what would they keep and why. Questions to consider as they write their summary entry: Do the objects they chose have special meaning? Do the objects reveal something about their personality or daily life?

ACTIVITIES AND PROGRAMS AT THE MUSEUM OF AMERICAN GLASS

Guided Tours

The Museum of American Glass, celebrating the creativity and craftsmanship of American glass, is at the core of WheatonArts. One of only eight museums in the state of New Jersey to be accredited by the American Alliance of Museums, it offers over 18,000 square feet of exhibition space, a collection over 20,000 pieces strong, as well as a research library and archives.

Explore the internationally known collection and discover the science, industry, art, and history of glassmaking during a guided tour with our museum docents. Tours are 45 minutes and accommodate grades 3 and above. Tours are limited to 25 students. The fee per class is \$25 and a reservation is necessary.

Please call 856-825-6800, ext. 100, or send an email to mail@wheatonarts.org for availability.

Glass Studio and Pottery Studio Demonstrations

Live demonstrations at WheatonArts' glass and ceramics studios allow visitors to learn firsthand about the materials and artisans' techniques.

School Group Workshops

At WheatonArts, we value the creative process, and the many ways in which engagement with the arts introduces learning skills and strengthens basic classroom curriculum goals. During your visit, enhance your students' experience with a special hands-on activity. The following activities will be offered April 1–December 31, 2016. Each workshop can accommodate up to 25 students for \$75/class. Reservations are required and must be made at least two (2) weeks in advance. Please call 856-825-6800, ext. 100, or send an email to mail@wheatonarts.org for availability.

Mystery Bag Art

Inspire creative thinking and problem solving with mystery bag challenges that can be adapted to a variety of subject areas: science, technology, art, engineering, math, history, and social studies. Students will each receive a bag filled with an assortment of materials. Using only the materials in their bags and some adhesives and binding material, students will create a contemporary sculpture.

Sugar Casting

Learn the technique of *pâte de verre* casting by using sugar, glue, and a mold to create a cast object. Artist Richard Harrod (exhibitor in *Mine Moonlight: Artists Working in the River Wards*) has used "trash" he found at the Fishtown Sugar House and cast the "trash" in sugar glass. During this workshop, kids will have an opportunity to make their own contemporary art object using granulated sugar.

Interactive Exhibits for Families

The following activity stations will be in the Museum of American Glass lobby. While they cannot accommodate the number of students in a school group visit, they are available for students and their families.

- **Artifact Identification Station**

Archaeologists do not always find all the pieces of an artifact. They often find only a few pieces, or sherds (broken pieces of glass or pottery), and must use those to make an educated guess about the appearance and use of the original piece. In this interactive station, you will exercise your investigative skills as you try to decipher what each sherd could represent. Is it a fragment of a bowl? A vase? A candlestick? Two stations contain a variety of sanded down glass sherds accompanied by a binder with images of the original artifact.

- **Mending Lab**

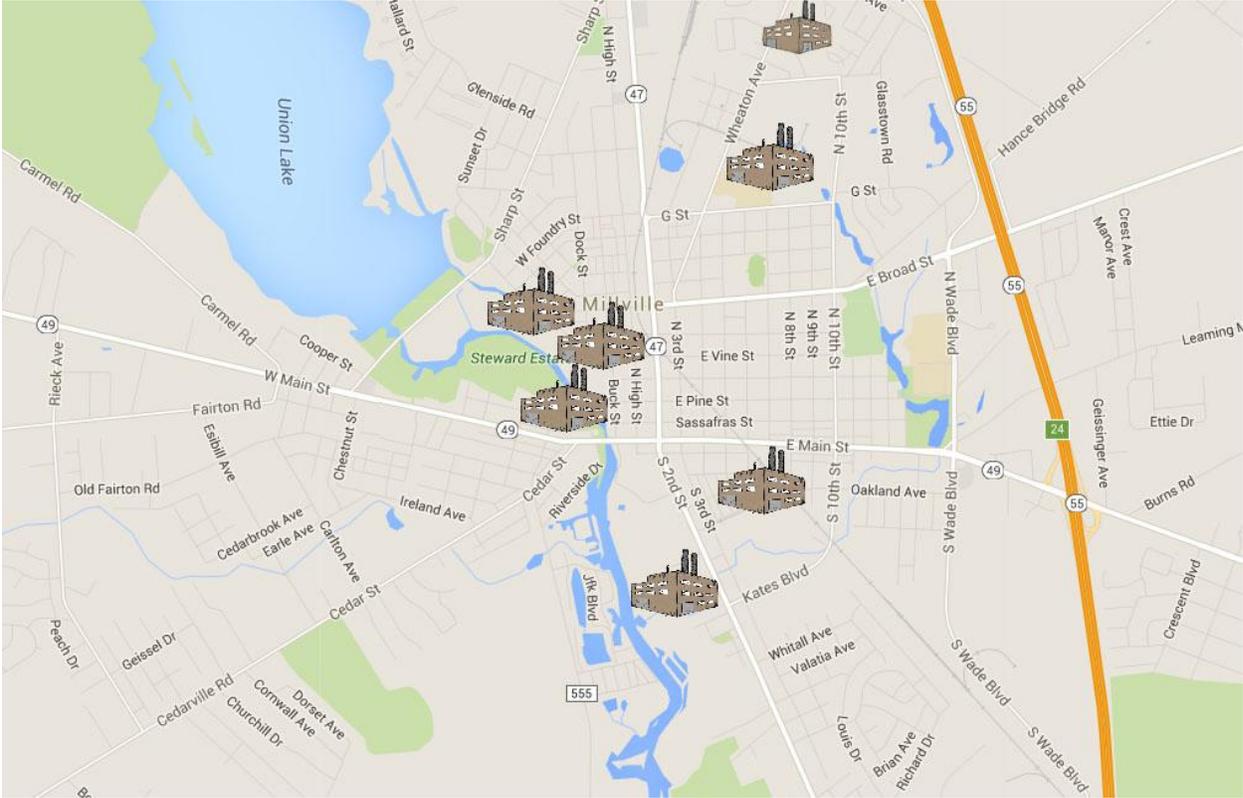
Archaeologists often find sherds during their excavations. Through a process called mending, they reassemble the pieces, similar to fitting together the pieces of a puzzle. In these interactive stations, you step into the shoes of the archaeologist as you attempt to mend the broken tile pieces. Take careful notice of the surface treatment of each piece. What color is the sherd? Has the surface been carved? Is the surface a raised-relief? Use these clues to guide your mending adventure.

WORKSHEETS

The following worksheets are supplementary materials for the pre- and post-visit activities and for our onsite programs.

Maps: Glassmaking Towns of New Jersey and Glass Factories in Millville	Pages 27–28
Gallery Scavenger Hunt: Objects of Past and Present	Page 29
Making Glass	Page 30
Story-Building Image Cards	Pages 31–34
○ Set 1: Pottery Wheel, Assorted Art Supplies, Clay Tools, Handmade Mug, Glass Vase, Wooden Block (Glass-Blowing Tool), Papermaking Screens, Block Printing Tools	
○ Set 2: Hand Knit Socks, Soldering Iron for Computer Boards, Gardening Tools, Knitting Needles, Shovel, Wrench, Ceramic Yarn Bowl	
Archaeological Dig: Artifact Log	Page 35
Artifact Log Sheet	Page 36
Millville Landscape Woodcuts	Pages 37–38

Map: Glass Factories in Millville



Listed top to bottom, left to right:

- The Caloris Co., 1914–1929
- T.C. Wheaton & Co., 1888–1996
- R.D. Wood & Co., 1863–1908
- Whitall Tatum Co., 1806–1938
- R.D. Wood & Co., 1863–1908
- Millville Bottle Works, 1903–1926
- Armstrong Cork, 1832–1999

Gallery Scavenger Hunt: Objects of Past and Present

During the excavation, archaeologists unearthed objects that were once used in daily life. These objects are now antiquated and have been replaced by updated, modern objects. As you explore the exhibition and learn about daily life in the past, match the historical artifacts on the left with their contemporary counterparts on the right by drawing a line from one side to the other.

Past

What is it?

Match to the Present















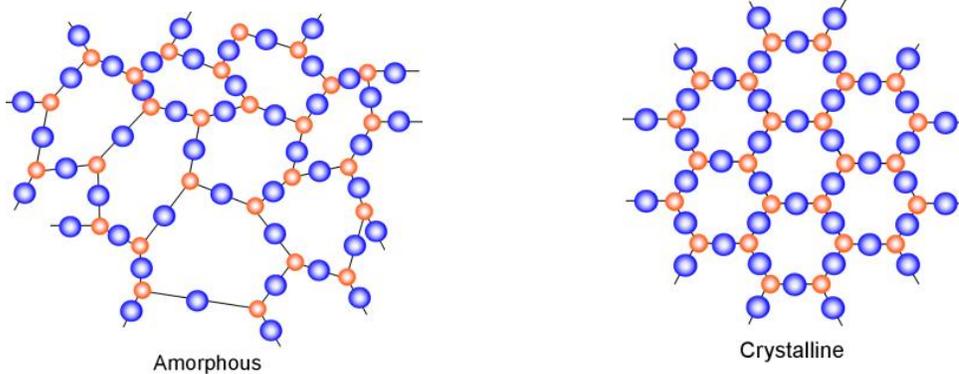




Making Glass

Glass is an extremely versatile material that is commonly used for various types of vessels, windows, and optics. We see it everywhere, but it is not easily defined. Glass is neither a true liquid nor a solid, but shares the qualities of both. It is often called an amorphous solid, and some scientists even consider it a fourth state of matter.

Glass is made by heating a mixture of dry ingredients, called batch, to a viscous state, then cooling it fast enough to prevent a regular crystalline structure. As the glass cools and becomes hard like a solid, the atoms become locked in a disordered state, like a liquid.



Glass batch has three main ingredients:

1. **Silica** (silicon dioxide), found in sand, is the main component in glass. It requires very high heat to become viscous.
2. An alkaline flux is needed to lower the melting point of the silica. In historical glass, the flux is usually **soda ash** (sodium carbonate), derived from marine plant ashes, or **potash** (potassium carbonate), made by burning bracken and trees.
3. A stabilizer is needed because the first two ingredients are water soluble. **Lime** (calcium carbonate) is the most common stabilizer.

Batch is heated in a furnace to about 2,400 °F. Broken glass, called cullet, is added to the batch to facilitate the melting process. Sometimes the glass itself is referred to as the “metal.” Other additives in the batch can change the properties and appearance of the glass, making it stronger, less reactive to heat, or opaque. There are thousands of different glass recipes.

Coloring Glass

The color of glass is determined by metallic oxides in the batch. Naturally occurring iron in the sand causes various shades of green, amber, and brown. Decolorants, such as manganese dioxide, are used to take the natural color out of the glass. However, it is very difficult to get all of the iron out of the sand. Common glass that appears colorless (clear) still has a subtle green or aquamarine tint visible in cross-section or in the thickest areas. “Artificial” colorants include cobalt for blue, manganese for amethyst, uranium for bright yellow, tin for opaque white, and gold chloride for ruby red.

Text provided by AECOM. More information can be found on Digging195.com.

Story-Building Image Cards Set 1



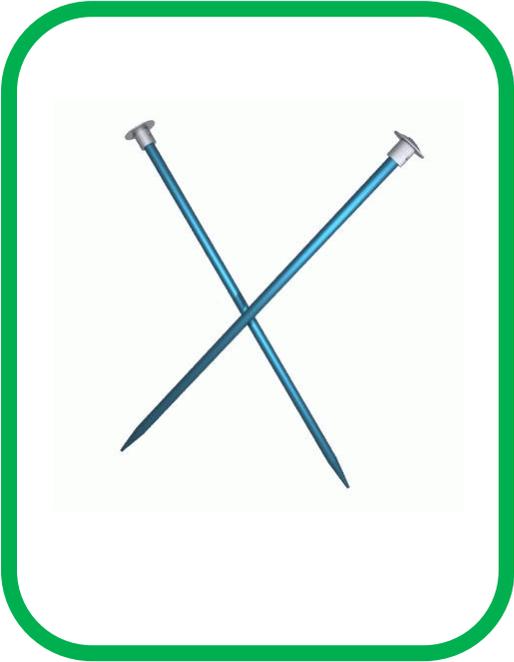
Story-Building Image Cards Set 1 (continued)



Story-Building Image Cards Set 2



**Story-Building Image Cards
Set 2 (continued)**



Archaeological Dig: Artifact Log

Part 1

The chart below represents the sampling of the dig site (your excavation tray). As you carefully discover artifacts, mark an X in the corresponding quadrant. Place each piece in a small plastic bag and label it with the quadrant letter and number in which it was found (example A1, C2, etc.).

Once all artifacts have been found, use Part 2 to describe each artifact. First, write the quadrant letter and number in which it was found. Next, describe the artifact. What color is it? Is it smooth, rough, etc.? What shape is it? Finally, draw a picture of the artifact.

	A	B	C
1			
2			

How many artifacts did you find? _____

Archaeological Dig: Artifact Log

Part 2

Quadrant: _____

Description:

Drawing:

Landscape Woodcuts of South Jersey¹



Cape May Island.



View in the Village of Cape May Courthouse.



Southern View in Bridgeton.

¹ Henry Howe and John W. Barber, "New Jersey," *Early Woodcuts Views of New York and New Jersey* (New York: Dover Publications, 1975), 82–83.

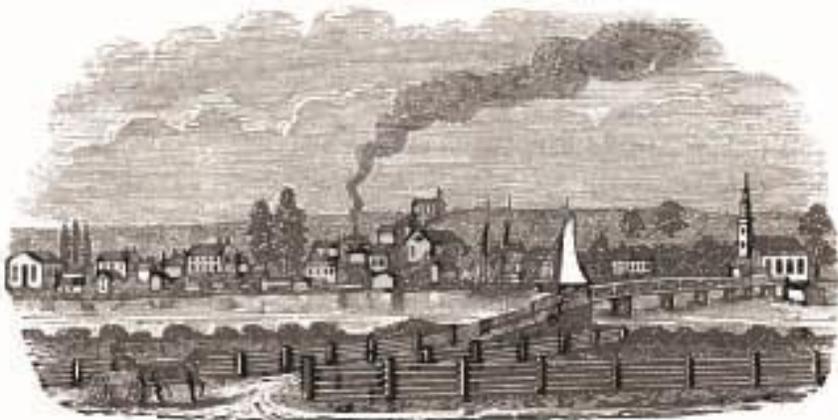
Landscape Woodcuts of South Jersey²



Northwest View of Port Elizabeth.



Northwest View of Millville.



Eastern View of Belleville.

² Howe and Barber, *Early Woodcuts Views of New York and New Jersey*, 82–83.

BIBLIOGRAPHY, LINKS, LEARNING RESOURCES

<http://diggingj95.com/>

Digging I-95: An interactive website/report about the archaeology of Northern Liberties, Kensington-Fishtown, and Port Richmond, along the Delaware River waterfront in Philadelphia.

<http://www.wheatonarts.org/visit/group-rate/>

Information for planning a visit with your class to WheatonArts

<http://www.wheatonarts.org/programs/12025-2/>

Information about the Museum of American Glass

<http://www.humanities.umd.edu/vislit/index.php>

For more information on visual literacy, visit *The Visual Literacy Toolbox: Learning to Read Images*, created by the College of Arts & Humanities, University of Maryland College Park

<http://www.loc.gov/teachers/usingprimarysources/>

<https://www.archives.gov/education/research/history-in-the-raw.html>

<http://teachinghistory.org/best-practices/using-primary-sources/19079>

For more information about primary sources

What do you think?

We would love to hear your comments regarding the exhibitions and this teacher's guide. We are always striving to improve our programs to better suit your needs. Did you use the pre-visit or post-visit activities in your classroom? How did the students respond to the activities? We also love to hear stories about your onsite visit!

Please send your comments to:

WheatonArts
Attention: Pamela Weichmann
1501 Glasstown Road
Millville, NJ 08332

Or send an email to pweichmann@wheatonarts.org.

We appreciate your feedback and thank you in advance for your time. Please be sure to check our website for future programs.

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