

# ANN NORTON SCULPTURE GARDENS



## Pre-Visit Educators' Resource K-10



### **Ann Norton Sculpture Gardens**

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## **I. SCULPTURE GARDENS INTRODUCTION**

### **A. MISSION**

It is the mission of the Ann Norton Sculpture Gardens to preserve the gardens as an outdoor setting for sculpture works, which will also benefit the biological chain of plants, wildlife, wild animals, and birds which inhabit or seasonally migrate to the area. The corporation will discourage use of poisonous sprays or insecticides within its property, except in the event of invasive diseases or plagues, etc., which may endanger the immediate or long-term well-being of said plants, birds, animals, and other wildlife.

To create a green area of indigenous and imported vegetation closely adjoining an area zoned for high-density population. A rare palm collection will be the special garden theme. The area will be managed to maintain a health-giving, life-giving ecological source of benefit to the citizens of the adjacent and surrounding communities, in order to further the common good and welfare of the people in those communities. They shall be entitled to visit the museum and grounds on payment of an admission fee during established open hours, and for special events as planned by the Board of Trustees and the Gardens staff.

### **B. VISION**

The Ann Norton Sculpture Gardens' vision for the future of the organization is to build lasting community stewardship that honors the integrity and intentions of its founder, Ann Norton, by continuing to follow its mission and the "Principles for the Gardens".

### **C. COMMUNITY ENRICHMENT PURPOSE**

Created in 2008, the Ann Norton Sculpture Gardens' Community Enrichment Program is designed to preserve the original intent and integrity of the historic site and provide cultural opportunities to all populations, through innovative programming incorporating the visual arts, environmental awareness, and interpretive history of Ann Weaver Norton. The program looks to foster collaborative partnerships and set the standard for good stewardship of the Gardens for future generations, as well as to create an environment to promote artistic growth, inspiration and enjoyment.

### **D. HISTORY**

The Ann Norton Sculpture Gardens (ANSG) comprises the former residence of sculptor Ann Weaver Norton (1905-1982), the widow of Ralph Hubbard Norton. The home was built in 1925 and later remodeled by well-known architect Marion Sims Wyeth in the mid 30s. The Ann Norton Sculpture Gardens is in the El Cid Historic District and is listed on local and the National Register of Historic Places. The setting, design materials and scale of the homes in El Cid indicate the area's development during the Florida Land Boom of the mid 1920s. Displayed throughout the house, studio and gardens are more than 100 works by the artist, including nine monumental sculptures, eight in brick and one in granite.

This property was first homesteaded by Benjamin Lanehart in 1876 who was the first permanent resident of the area, moving to the western shore of Lake Worth in 1875. By 1910, the local population of the area doubled and Mr. Lanehart, along with fellow homesteader, Elizabeth Wilder (Moore), who settled south of the lake, sold pieces of their land to arriving pioneers and thus divided their land into 22 parcels. El Cid's proximity to downtown and the west shore of Lake Worth attracted affluent business, political and social

leaders of the time, including Pittsburgh socialite, John S. “Jay” Phipps. The son of Andrew Carnegie’s partner in U.S. Steel, Mr. Phipps moved to West Palm Beach and bought neighboring properties to develop three of the largest subdivisions in the Historic District of El Cid.

## **II. PROGRAM GOAL**

The Ann Norton Sculpture Garden is a living classroom. Our goal is to provide a learning environment that teaches to multiple intelligences, is interdisciplinary in nature and offers engaging opportunities for students to experience environmental sciences and visual arts within real world context. The unique Ann Norton Sculpture Garden and Kids Ecology Corps programs feature interactive, hands-on curriculum where students discover and immerse themselves in the urban green oasis and ecosystems Ann Norton preserved.

The ANSG curriculum provides students the opportunity to explore our rare palms from around the world, native Florida plants and wildlife, and diverse local ecological environments. In addition, students will learn about Ann Weaver Norton’s art, her life and her legacy.

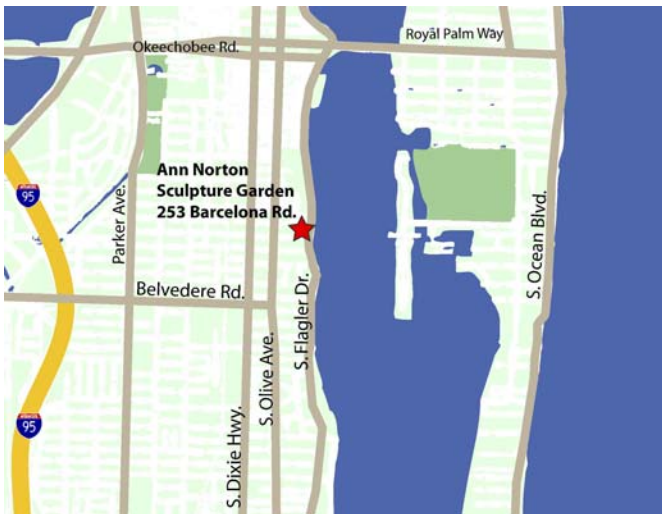
### III. TOURS AND WORKSHOPS

#### A. SCHEDULING

- Please schedule your visit at least three weeks prior to the date you wish to bring your class.
- To schedule a visit to the Ann Norton Sculpture Gardens contact Pamela [education@ansg.org](mailto:education@ansg.org)
- Guided tours are 45 minutes long. Tours with field experience are approximately 1½ hours long.
- The cost is \$3.00 per student for guided tours. Tours and workshops are \$6.00 per student (minimum 10 students)
- Please wear comfortable clothes and comfortable shoes.
- Please be sure to apply sunscreen before your visit as part of your experience will take place outdoors and visitors may be exposed to sun.
- Students can bring a bag lunch to enjoy in the garden courtyard at the completion of your tour and field experience.

#### B. STUDENT ETIQUET

- Students are expected to be good listeners and respectful to tour guides during their presentation.
- Visitors should not touch any of the artwork or plants. This is to protect the artwork and to protect our visitors against allergic reactions to any of the plant species.



#### C. DIRECTIONS

From I-95, head east on Okeechobee Boulevard to South Flagler Drive, head south (right) one half mile to the corner of Barcelona Road and South Flagler. Take a right onto South Flagler Drive to first house on the right.

From Palm Beach, cross the waterway at Royal Palm Way (the middle bridge), head south (left) to the corner of Barcelona Road and South Flagler. Take a right onto South Flagler Drive to first house on the right.

Contact the Community Enrichment Director at [education@ansg.org](mailto:education@ansg.org) for group or bus parking arrangements.

### IV. CURRICULUM TEAM

Pamela Larkin Caruso, *Community Enrichment Director*  
Ann Norton Sculpture Gardens

Cynthia E. Palmieri, *Managing Director*  
Ann Norton Sculpture Gardens

Stacie Panton  
*Kids Ecology Corps*

## V. PRE-VISIT INFORMATION

### A. ANN WEAVER NORTON TIMELINE

#### **Ann Norton**

Artist Clara Weaver Parrish, Ann Weaver Norton's aunt, was Ann's main inspiration and driving force, encouraging her to go to New York and become an artist. Ann followed in her aunt's footsteps attending Cooper Union and getting the Carnegie Foundation Travel Award. Norton lived in abject poverty while an artist in New York having no source of income but her art. Needing to find some way to support herself she asked friends to find her a teaching position and that is how she came to be the first sculpture teacher at the Norton Gallery and School Art. In 1942 she came to West Palm Beach by train with 50 cents to her name. At the age of 42 she married Ralph Norton, art collector, philanthropist and founder of what is now known as the Norton Museum.

- **1905** - Ann Vaughan Weaver born, Selma, AL
- **1929** - Arrives in New York, Studied Cooper Union School of Art, NY, NY (4 Years)-Studied National Academy of Design, NY, NY, (3 years) and Studied The Art Students League, New York, NY
- **1930** - Exhibition, Museum of Modern Art, New York, NY(Negro Head, plaster 1928)
- **1930** - Exhibition, Whitney Museum of American Art, New York, NY
- **1930** - Frawg
- **1931** - Boochy's Wings
- **1932** - Pappy King
- **1934** - Seligmann Galleries, New York, Group Show by Young Americans
- **1935** - Group Exhibition, Museum of Modern Art, New York
- **1935** - Carnegie Foundation Traveling Fellowships, Vezeley, France, Center of Romanesque Architecture
- **1936** - Group Exhibition, Whitney Museum of American Art, New York
- **1940** - Carnegie Foundation Traveling Fellowship, Italy
- **1940 (41)** - Whitney Museum of American Art, 10 West 8<sup>th</sup> Street, Sculpture Festival of the National Sculpture Society(Design for Memorial Monument, Marble 1936)
- **1942** - Arrives West Palm Beach to teach sculpture at the Norton Gallery and School of Art
- **1943-1945** - Society of the Four Arts
- **1943-1946** - Norton Gallery and School of Art
- **1948** - Married Ralph Norton
- **1948**- Society of the Four Arts
- **1948-1951** - Norton Gallery and School of Art
- **1950** – Two Person, Lowe Museum of Art, Coral Gables, FL
- **1950-1952** - Society of the Four Arts
- **1952** – Group Exhibition, Lowe Gallery, Coral Gables, FL
- **1953** - Ralph Norton dies
- **1960** - Group Exhibition, National Gallery of Art, Havana Cuba
- **1960** – Group Exhibition, Schneider Gallery, Rome Italy
- **1961** - Group Exhibition, Galleria XXII, Marzok, Venice Italy
- **1963** – “Associated Florida Sculptors Sixth Annual Exhibition, Group Exhibition, Lowe Museum of Art, Coral Gables, FL
- **1968** - Solo Exhibition, Bodley Gallery, New York
- **1969** – Solo Exhibition, Norton Gallery and School of Art, West Palm Beach, FL
- **1970** - Solo Exhibition, Bodley Gallery, New York
- **1972-1973** – Solo Exhibition, Galerie Juarez, Palm Beach, FL
- **1976** - Group Exhibition, Musee Rodin, Paris
- **1977** - Ann Weaver Norton submits articles of incorporation for the gardens-approved 1979
- **1978** - Solo Exhibition, The Clocktower, New York, NY
- **1979** - Commission Awarded, Brattle Square, Cambridge Arts Council, MA

- **1980** - “Ann Norton: Gateways”, Solo Exhibition, Max Hutchinson Gallery, New York-(March 6<sup>th</sup>-April 18<sup>th</sup>)
- **1980** - Two Person Exhibition, Lowe Museum of Art, Coral Gables, FL
- **1981** - National Endowment for the Arts
- **1982** - “Women’s Art: Miles Apart”, Group Exhibition, Aaron Berman Gallery, New York, NY
- **1982** - “Women’s Art: Miles Apart”, Group Exhibition, Orlando, FL: Velencia Community College
- **1982** – Group Exhibition, Lock Haven Art Center, Orlando, FL
- **1982** - Ann Norton Dies, West Palm Beach, FL
- **1982** - Ann Weaver Norton: Sculptor, A Memorial Exhibition, Norton Museum of Art, West Palm Beach, FL
- **1987** - Two Person Exhibition, Joy Moos Gallery, Miami, FL
- **1990** - Receive Department of State Grant
- **1991** - Ann Norton: The Unknown Works, Old School Square, Delray, FL
- **1991**- Individual National Register Listing-Local District Designation-Contributing Site
- **1991**- Established Gentlemen of the Gardens to fund the maintenance of the gardens
- **1991** – Old School Square (Jan 17-Mar 21)
- **2003** - ANSG Receives Department of State Grant
- **Jan. and Dec. 2006** - Receive New York Foundation for the Arts grant for restoration of the gardens
- **Feb. and April 2007**- Receive New York Foundation for the Arts grant for master plan of the gardens
- **Aug. 2007**-Visual Arts and Language Arts curriculum approved by Palm Beach County School District
- **Sept. 2007**-ANSG creates Community Enrichment Program
- **Dec. 2007**- First Annual Festival of the Trees Fundraiser
- **Jan. 2008**-ANSG Receive RAP Grant from Palm Beach County to begin archives and studio restoration.
- **Jan. 2008**-Create Community Enrichment Forum-(Professionals in the fields of education, visual art, environmental science, horticulture and preservation)
- **April 2008**- First Annual-Earth Days at the Gardens-Community Partnership
- **May 2008**-Cultural Council Grant for creation of interpretive history of Ann Weaver Norton walking tour project

**Apprenticed With:**

Alexander Archeipenko, NY, NY (Russian)  
John Hovannes, NY, NY (Turkey)

**Principal Exhibitions:**

Museum of Modern Art, NY  
Whitney Museum of American Art, NY  
Musee Rodin, Paris  
The Clocktower, NY  
Lowe Museum, Miami, FL  
Norton Museum, West Palm Beach, FL

**Awards**

Carnegie Foundation Traveling Fellowships, Vezeley, France, Center of Romanesque Architecture  
Carnegie Foundation Traveling Fellowship, Italy  
Society of the Four Arts, Palm Beach, FL  
National Endowment for the Arts

**Collections**

Norton Museum of Art, West Palm Beach, FL  
High Museum of Art, Atlanta, GA  
Detroit Institute of FineArts, Detroit, MI  
Storm King Art Center, Mountainville, NY  
Private Collections

**Sculpture Materials:**

Bronze  
Brass  
Pewter  
Plaster  
Tennessee Marble  
Wood  
Norwegian Granite  
Brick

**Artistic Influences**

Industrialism  
Gothic  
Cubism  
Classicism  
Abstraction  
Expressionism  
Pre-Columbian Art

**Additional Influence**

Environment  
Landscapes/Mountain Ranges  
Southwest Influence  
Architecture  
Buddhism and Eastern Asian Influences  
Maya Influences

**Artists influence**

Auguste Rodin (French)  
Alexander Archipenko (Russia) (1887-1964)  
John Hovannes (Turkey) (1900-73)  
Charles Rudy (American)  
Jose de Creeft (Spain) (1884-1982)  
Dahli Lama



**Top Left**  
Ann in her Studio, ca. 1970

**Top Right**  
*Standing Figures*, 1966,  
Made of Norway Granite

**Lower Left**  
Gateway No. 5, 1977  
Made of Brick

**Lower Center**  
Gateway No.4,  
Made of Brick

**Lower Right**  
Untitled, 1980  
Made of Brick





*Untitled 1979, Mexican Brick*



*Study for Seven Figures, Bronze*

## B. SCIENCE VOCABULARY

**Adaptations - 1 a :** the act or process of adapting **b :** the state of being adapted

**2 :** adjustment to environmental conditions: as **a :** adjustment of a sense organ to the degree or quality of stimulation **b :** change in an organism or its parts that fits it better for the conditions of its environment;  
*also :* a structure resulting from this change

**Ecology - 1 :** a branch of science concerned with the relationships between living things and their environment **2 :** the totality pattern of relationships between a group of living things(organisms) and their environment

**Environment - 1 :** the surrounding conditions or forces that influence or modify: as **a :** the whole complex of factors (as soil, climate, and living things) that influence the form and the ability to survive of a plant or animal or ecological community **2 a :** the complex of physical, chemical, and biotic factors (as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival

**Food chain - 1 :** an arrangement of the organisms of an ecological community according to the order of predation in which each uses the next usually lower member as a food source

**Identify - 1a :** the series of stages of form and activity through which a living thing passes from a beginning stage (as an egg) in one individual to the same stage in its offspring **b :** to determine the taxonomic position of (a biological specimen)

**Life cycle - 1 a:** the series of stages of form and activity through which a living thing passes from a beginning stage (as an egg) in one individual to the same stage in its offspring

**b :** the series of stages in form and functional activity through which an organism passes between successive recurrences of a specified primary stage

**Mass -** Refers to the effect and degree of bulk, density, and weight of matter in space; the area occupied by a form such as a building or sculpture. As opposed to plane and area, mass is three-dimensional.

**Native - 4 a :** grown, produced, or having its beginning in a particular region <native art> <native stone>  
**b :** living or growing naturally in a particular region <native plants> **6 a :** grown, produced, or originating in a particular place or in the vicinity : **LOCAL** **b :** living or growing naturally in a particular region : **INDIGENOUS** **8 a :** constituting the original substance or source **b :** found in nature especially in an

unadulterated form

**Observation - 1 a:** an act of gathering information (as for scientific studies) by noting facts or occurrences **b** : an opinion formed or expressed after observing **2 a** : an act of recognizing and noting a fact or occurrence often involving measurement with instruments **b** : a record or description so obtained

**Organisms - 1** : a complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole

**Pollutants** - to make impure; *especially* : to spoil (as a natural resource) with waste made by humans <industrial wastes *polluted* the river>

**Predators - 1** : one that preys, destroys, or devours : an animal that lives by killing and eating other animals

**Taxonomy - 1** : the study of scientific classification **2** : *especially* : orderly classification of plants and animals according to their presumed natural relationships

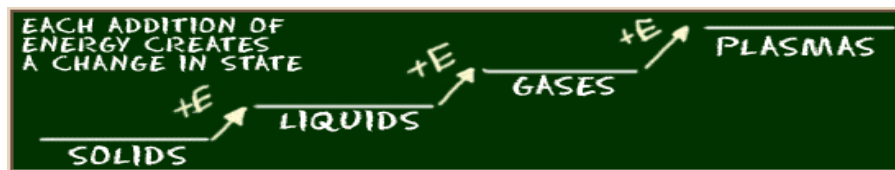
**Urban** - of, relating to, typical of, or being a city

## 1. States of Matter

There are five main states of matter. Solids, liquids, gases, plasmas, and Bose-Einstein condensates are all different states of matter. Each of these states is also known as a phase. Elements and compounds can move from one phase to another phase when special **physical forces** are present. One example of those forces is temperature. The phase or state of matter can change when the temperature changes. Generally, as the temperature rises, matter moves to a more active state.



Phase describes a physical state of matter. The key word to notice is physical. Things only move from one phase to another by physical means. If energy is added (like increasing the temperature or increasing pressure) or if energy is taken away (like freezing something or decreasing pressure) you have created a physical change.



One compound or element can move from phase to phase, but still be the same substance. You can see water **vapor** over a boiling pot of water. That vapor (or gas) can **condense** and become a drop of water. If you put that drop in the freezer, it would become a solid. No matter what phase it was in, it was always water. It always had the same chemical properties. On the other hand, a chemical change would change the way the water acted, eventually making it not water, but something completely new.

## C. VISUAL ART VOCABULARY

**Abstract**-Using elements of form (as color, line, or texture) with little or no attempt at creating a realistic picture <*abstract art*>

**Apprentice**- is a person who is learning an art, a craft or occupation from one or more masters of that work. This was the prevailing means of entering many professions in Europe from the time of the Middle Ages to the nineteenth century

**Armature**-is a skeleton-like framework to give rigid internal support to a modeled sculpture. Such sculptures are typically of either clay or wax. Armature wire used to build an armature is available in various gauges. A basic linear form in wire can be made with poultry screen or padded with wood or paper if appropriate. The medium is modeled directly onto the armature.

**Brass**-an alloy containing copper and zinc

**Bronze**-an alloy of copper and tin and sometimes other elements (as zinc)

**Carving**-one of the oldest sculptural techniques. It is a subtractive process; starting with a solid block, the sculptor removes material using chisels and other tools to 'reveal' the finished form. Traditional carving materials include stone, especially marble, and fine grained woods.

**Casting**-a method of producing one or more copies of a sculpture. Typically, the original sculpture is modeled as usual and covered with a material which sets hard when dry. The mould is then separated to release the original sculpture. Once the mould is reassembled, the casting material is poured in to the void and left to set. Traditionally, molten bronze is used as the casting material, but modern alternatives include resin. When the cast sculpture has cooled, or cured, the mould is again separated to release it, and reassembled ready to cast the next copy. The cast sculpture may then require some finishing work to remove mould lines and other imperfections.

**Cubism**-a style of art in which natural forms are broken up into geometric shapes (as squares, triangles, or circles) - **cub·ist** /*adjective or noun*

**Direct carving**-a 20th century term used to describe a less planned approach to carving in which the sculptor carves the finished sculpture without using intermediate models or maquettes. The sculptor either works from memory or works whilst observing the subject. In some respects it can be seen as a return to the direct approach used in primitive art. This style of carving is also referred to as *taille directe*.

**Fabricate** - In general, to make, to create, more specifically, to construct or assemble something. Some artists have relegated parts or all of their works' fabrication to others. Examples include Sol LeWitt, Vito Acconci, Laurie Anderson, Gilbert and George, Jeff Koons, Andy Warhol, numerous printmakers (artists working with master printers), and sculptors of **escarving** - The technique of cutting and abrading the surface of a block of material to shape it into a particular form. Among the materials appropriate for carving in schools include clay, chalk, plaster, soft salt blocks, artificial sandstone, bar soap, and wax. Also see subtractive, assemblage, construction, dent, detritus, erasure, fragment, hollow carving, kerf, mark, misericord, modeling, sculpture, solvent, statue, stress, and the names of materials typically carved, such as alabaster, limestone, marble, and wood. pecially large or technically demanding works



**Focal point** - The portion of an artwork's composition on which interest or attention centers. The focal point may be most interesting for any of several reasons: it may be given formal emphasis; its meaning may be controversial, incongruous, or otherwise compelling.

**Form-** refers to an element of art that is three-dimensional (height, width, and depth) and encloses volume. For example, a triangle, which is two-dimensional, is a shape, but a pyramid, which is three-dimensional, is a form. Cubes, spheres, ovoids, pyramids, cone, and cylinders are examples of various forms

**Found image, found material, or found object** - An image, material, or object, not originally intended as a work of art, that is obtained, selected, and exhibited by an artist, often without being altered in any way. The cubists, dadaists, and surrealists originated the use of found images / materials / objects. Although it can be a natural or manufactured image / material / object, the term readymade refers only to those which were manufactured. Also known in the French, *objet trouvé*.

**Foundry-** A workplace where metal is melted and poured into molds. Also see cast, forge, and lost-wax casting.

**Horizontal - 1:** of or relating to the horizon **2:** parallel to the horizon **3:** being on the same level

**Lost-wax casting** - a casting process for which a sculptor first produces his sculpture in wax. He creates a mold around this made of refractory materials. When the mold is heated, the wax melts away, so that molten metal can replace it, reproducing exactly the original wax sculpture.

**Maquette**-a small scale model for a finished sculpture. It is used to visualize and test shapes and ideas without incurring the cost and effort of producing a full scale sculpture. It is the analogue of the painter's cartoon or sketch. For commissioned sculptures, especially monumental public sculptures, a maquette may be used to show the client how the finished work will fit in the proposed site.

**Marble**-a limestone that takes a high polish and is used in architecture and sculpture **b:** something made from marble; *especially*: a piece of sculpture.

**Mass** - Refers to the effect and degree of bulk, density, and weight of matter in space; the area occupied by a form such as a building or sculpture. As opposed to plane and area, mass is three-dimensional.

**Medium**-is the material or technique used by an artist to produce a work of art

**Modeling**-one of the most common techniques for sculpting. It is an additive process in which material is steadily built up to produce the finished figure. Unlike carving, the sculptor often also has the option of correcting mistakes by removing or reshaping material. Modeling requires a malleable or plastic material which is later cured or fired to set it hard. Typical modeling materials include clay, wax, plaster, and papier-mâché. Frequently the modeling material has limited structural strength and will need the support of an armature.

**Mould**-A mould is a reversed impression of a sculpture which is used to cast replica sculptures. The material used to construct the mould needs to accurately reproduce the surface detail of the original sculpture and also being strong enough to keep its shape during casting and resilient enough to retain detail after multiple castings. Typical moulding materials include rubber, especially latex rubber, plaster and composites such as *ciment fondu*. - A hollow form for shaping (casting ) a fluid or plastic medium, such as clay, plaster, plastic or molten metal. In papermaking, the lower screen that holds the pulp (the upper frame is a deckle). Also see core, gelatin, hollow casting, investment, latex, lost-wax casting, mother mold, polyurethane, release agent, and silicone rubber.

**Monolith**-A stone, either decorated or not decorated, erected as a single slab or shaft. Also see cairn, colossus and colossal, commemorate, cromlech, dolmen, megalith, memorial, monument, obelisk, Seven Wonders of the Ancient World, and Stone Age

**Monumental** - **1**: of or relating to a monument **2**: serving as or resembling a monument: **MASSIVE**; *also*: highly significant: **OUTSTANDING**

**Patina** - A sheen or coloration on any surface, either unintended and produced by age or intended and produced by simulation or stimulation, which signifies the object's age; also called *aerugo*, *aes ustum*, and *verdigris*. Typically a thin layer of greens (sometimes reds or blues), usually basic copper sulfate, that forms on copper or copper alloys, such as bronze, as a result of oxidation and corrosion. Metal objects have naturally acquired patinas when long buried in soil or immersed in water. Such naturally formed patinas have come to be greatly prized. There are many formulae for the pickles and chemical treatments of metals which may be employed to encourage the formation of patinas. A person who produces patinas is a patineur.

**Plasticene**- an oil-based clay used for modeling sculptures; its chief advantages over water clay is it does not shrink, crack or dry out and can be worked on over a long period of time.

**Scale** - A ratio (proportion) used in determining the dimensional relationship (analogy) between a representation to that which it represents (its actual size), as in maps, architectural plans, and models. This is often expressed numerically as two quantities separated by a colon (:). For example, a scale noted as "1:50." This scale would be read "one to fifty," meaning "one unit of measurement [inches, feet, meters, etc.] here represents fifty of the same units at full size." A size equal to actual size is full-scale. Sometimes scale is called "proper proportion." Also see caliper, close-up, human scale, imbrication, pantograph, pointing and pointing machine, puppet, scaling up, and visual scale.

**Scaling up** - A mechanical method of copying a small sculpture on a larger scale by increasing all the measurements proportionately, using such measuring devices as a scaling board, caliper, or pointing machine.

**Sculpture garden** and **sculpture park** - Environments, all or mostly out of doors, which serve as a setting where sculptures are exhibited.

**Subtraction, subtractive** - Subtraction is the act of removing. In art, an action is subtractive when it produces subtraction, as of some materials in carving, for example. Materials especially appropriate for subtractive sculpture in schools include clay, chalk, plaster, soft salt blocks, artificial sandstone, soap, and wax.

**Three-dimensional** - Function: *adjective* - **1**: of, relating to, or having three dimensions (as length, width, and height); giving the appearance of depth or varying distances

**Two-Dimensional**- of, relating to, or having two dimensions

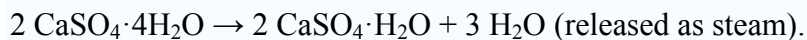
**Vertical** - **1**: directly overhead **2**: going straight up or down from a level surface

## D. VISUAL ART PROFESSIONAL DEVELOPMENT: ART PROCESSES AND MEDIUMS

- Teachers will read *The Art and Life of Ann Vaughan Weaver Norton*, (1905-1982) (Available on loan or for purchase from sculpture gardens) to gain a strong understanding of Ann Norton's life, influences and her legacy.
- Research artist Alexander Archipenko (1887-1964) [www.archipenko.org](http://www.archipenko.org) and learn about his life and art. Teachers will learn about Archipenko's influence on Ann Norton and can compare and contrast their work.
- Teachers will learn about various sculpture processes and mediums below, including but not limited to: plaster model making, lost wax casting and direct carving.
- Teachers will participate in workshops with the students and work in plaster to gain an understanding of plaster as an artistic medium.

### 2. Plaster

**Plaster of Paris**, or simply **plaster**, is a type of building material based on calcium sulfate hemihydrate, nominally  $\text{CaSO}_4 \cdot 0.5\text{H}_2\text{O}$ . It is created by heating gypsum to about 150 °C.



A large gypsum deposit at Montmartre in Paris is the source of the name. When the dry plaster powder is mixed with water, it re-forms into gypsum. Plaster is used as a building material similar to mortar or cement. Like those materials plaster starts as a dry powder that is mixed with water to form a paste which liberates heat and then hardens. Unlike mortar and cement, plaster remains quite soft after drying, and can be easily manipulated with metal tools or even sandpaper. These characteristics make plaster suitable for a finishing, rather than a load-bearing material.

Plaster was a common building material for wall surfaces in a process known as lath and plaster, whereby a series of wooden strips are covered with a semi-dry plaster and then hardened into surface. The plaster used in most lath-and-plaster construction was mainly lime plaster. Lime plaster cure time is about a month. To stabilize the lime plaster during curing, small amounts of Plaster of Paris were mixed into the putty. Because Plaster of Paris sets quickly, "retardants" were used to slow setting time enough to allow workers to mix large working quantities of lime putty plaster. A modern form of this method uses expanded metal mesh over wood or metal structures, which allows a great freedom of design as it is adaptable to both simple and compound curves. Today this building method has been partly replaced with drywall, also composed mostly of gypsum plaster. In both these methods a primary advantage of the material is that it is resistant to a fire within a room and so can assist in reducing or eliminating structural damage or destruction provided the fire is promptly extinguished.

One of the skills used in movie and theatrical sets is that of "plasterer", and the material is often used to simulate the appearance of surfaces of wood, stone, or metal. Nowadays, plasterers are just as likely to use expanded polystyrene, although the job title remains unchanged.

### Use in architecture



19th century plasterwork from House of Borujerdies in Kashan, Iran.



Plaster relief by Ann Weaver Norton

Plaster may also be used to create complex detailing for use in room interiors. These may be geometric (simulating wood or stone) or naturalistic (simulating leaves, vines, and flowers) These are also often used to simulate wood or stone detailing found in more substantial buildings.

### Use in the arts

Many of the greatest paintings in Europe, like Michelangelo's Sistine Chapel ceiling are executed in Fresco, meaning they are painted on a thin layer of wet plaster, called *intonaco* (in fact the general term for plaster in Italian); the pigments sink into this layer so that the plaster itself becomes the medium holding them, which accounts for the excellent durability of fresco. Additional work may be added *a secco* on top of the dry plaster, though this is generally less durable.

Plaster may be cast directly into a damp clay mold. In creating this, *mold-molds* (molds designed for making multiple copies) or *waste molds* (for single use) would be made of plaster. This "negative" image, if properly designed, may be used to produce clay productions, which when fired in a kiln become terra cotta building decorations, or these may be used to create cast concrete sculptures. If a plaster positive was desired this would be constructed or cast to form a durable image artwork. As a model for stonemasons this would be sufficient. If intended for producing a bronze casting the plaster positive could be further worked to produce smooth surfaces. An advantage of this plaster image is that it is relatively cheap; should a patron approve of the durable image and be willing to bear further expense, subsequent molds could be made for the creation of a wax image to be used in lost wax casting, a far more expensive process. In lieu of producing a bronze image suitable for outdoor use the plaster image may be painted to resemble a metal image; such sculptures are suitable only for presentation in a weather-protected environment.



Example of a stenciled plaster design

Plaster expands while hardening, and then contracts slightly just before hardening completely. This makes plaster excellent for use in molds, and it is often used as an artistic material for casting. Plaster is also commonly spread over an armature (form), usually made of wire, mesh or other materials.

Plaster is often used in Faux Finishing to create textures for wall and furniture surfaces, as in Venetian Plaster and also in stenciling for raised details. For these processes, artists use limestone based plasters or new user friendly acrylic based plaster.

### **Use in medicine**

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Plaster is widely used as a support for broken bones; a bandage impregnated with plaster is moistened and then wrapped around the damaged limb, setting into a close-fitting yet easily removed tube, known as a Cast (orthopedic) cast; however, this is slowly being replaced by a fiberglass variety.

Plaster is also used within radiotherapy when making immobilization casts for patients. Plaster bandages are used when constructing an impression of the patients head and neck, and liquid plaster is used to fill the impression and produce a plaster bust. Perspex is then vacuum formed over this bust creating an immobilization shell.

In dentistry, plaster is used for mounting casts or models of oral tissues. These diagnostic and working models are usually made from dental stone, a stronger, harder and denser derivative of plaster which is manufactured from gypsum under pressure. Plaster is also used to invest or flask wax dentures, the wax being subsequently removed and replaced with the final denture base material which is cured in the plaster mold.

## Lime plaster

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Lime plaster is a mixture of calcium hydroxide and sand (or other inert fillers). Carbon dioxide in the atmosphere causes the plaster to set by transforming the calcium hydroxide into calcium carbonate (limestone). Whitewash is based on the same chemistry.

To make lime plaster, Limestone (calcium carbonate) is heated to produce quicklime (calcium oxide). Water is then added to produce slaked lime (calcium hydroxide), which is sold as a white powder. Additional water is added to form a paste prior to use. The paste may be stored in air-tight containers. Once exposed to the atmosphere, the calcium hydroxide turns back into limestone, causing the plaster to set.

Lime plaster is used for true frescoes. Pigments, diluted in water, are applied to the still wet plaster.

## Cement plaster

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Cement plaster is a mixture of suitable plaster sand, portland cement and water which is normally applied to masonry interiors and exteriors to achieve a smooth surface. Interior surfaces sometimes receive a final layer of gypsum plaster. Walls constructed with stock bricks are normally plastered while face brick walls are not plastered. Various cement-based plasters are also used as proprietary spray fireproofing products, the world over. These usually use vermiculite as lightweight aggregate. Heavy versions of such plasters are also in use for exterior fireproofing, to protect LPG vessels, pipe bridges and vessel skirts.

## Plaster Cast



Plaster cast bust of Washington

by Jean-Antoine Houdon based on a life mask cast in 1786.

A **plaster cast** is a copy made in plaster of another 3-dimensional form, usually a metal or stone sculpture (although the technique is also used to create copies of fossilized bones, or of fresh or fossilized footprints of living animals, dinosaurs or prehistoric humans, particularly in paleontology - a track of dinosaur footprints made in this way can be seen outside the Oxford University Museum of Natural History, whilst a cast was also allegedly made by Paterson and Gimlin of the footprints of Bigfoot). It may also describe a finished original sculpture made out of plaster, though these are rarer.

Sometimes a blank block of plaster itself was carved to produce mock-ups or first drafts of sculptures (usually relief sculptures) that would ultimately be sculpted in stone. These are still described as plaster casts. Examples of these by John Flaxman may be found in the central rotunda of the library at University College London, and elsewhere in the University's collections.

## Method

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Plaster is applied to the original to create a mould or cast (that is, a negative impression) of the original. This mould is then removed and fresh plaster is poured into it, creating a copy in plaster of the original.

## History

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### Early

The practice of reproducing famous sculptures in plaster originally dates back to the sixteenth century when Leone Leoni assembled a collection of casts in Milan. He collected: "as many of the most celebrated works... carved and cast, antique and modern as he was able to obtain anywhere". Such private collections, however, remained modest and uncommon until the 18th century.

### Classical sculpture

Use of such casts was particularly prevalent among classicists of the 18th and 19th centuries, and by 1800 there were extensive collections in Berlin, Paris, Vienna and elsewhere. By creating copies of ancient Greek and Roman sculptures held at various museums across Europe in this way, a reference collection of all the best and most representative sculptural types could be formed, at a fraction of the cost of purchasing original sculptures, which scholars could consult without necessarily having to travel abroad to see all the originals. These casts could also be used in experiments in polychrome (reconstructing paint layers found on sculptures), reconstruction (eg Adolf Furtwängler's reconstruction of the Lemnian Athena from pieces found in different places), and for filling holes in a museum's collections of actual sculpture (eg the British Museum sent casts of some of its Mesopotamian collection to the Louvre in return for a cast of the Louvre's Code of Hammurabi).

### Other ancient cultures

The technique was also applied later that century to reliefs from Ancient Egypt and friezes from Mesopotamia (examples of both of which may be seen on the North-East Staircase and in Room 52 of the British Museum), as well as to medieval and Renaissance sculptures (as may be seen in the Cast Courts at the Victoria and Albert Museum, which were a product of growing interest in medieval art at that time and the resulting desire to have a 'reference collection' of such art). In the early 19th century, for example, perhaps as an expression of national pride, casts were made of outstanding national monuments particularly in France and Germany.

## Cast Collections

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As well as those locations mentioned above, classical cast collections may be seen at the Museum of Classical Archaeology at the University of Cambridge, at the Ashmolean Museum in Oxford, and in the Royal Cast Collection in Copenhagen. (The British Museum also holds classical casts, but these are currently all in storage.)

### 3. Lost-Wax Casting

**Lost-wax casting**, sometimes called by the French name of **cire perdue**, is the process by which a bronze is cast from an artist's sculpture; in industrial uses the modern process is called investment casting. An ancient practice, the process today varies from foundry to foundry, but the steps which are usually used in casting small bronze sculptures in a modern bronze foundry are generally quite standardized.

1. **Sculpting.** An artist creates an original artwork from wax, clay, or another material. Wax and oil-based clay are often preferred because these materials retain their softness.
2. **Mold making.** A mold is made of the original sculpture. Most molds are at least two pieces, and a shim with keys is placed between the two halves during construction so that the mold can be put back together accurately. Most molds of small sculptures are made from plaster, but can also be made of fiberglass or other materials. To preserve the fine details on the original artwork's surface, there is usually an inner mold made of latex, vinyl, or silicone which is supported by the plaster part of the mold. Usually, the original artwork is destroyed during the making and initial deconstruction of the plaster mold. This is because the originals are solid, and do not easily bend as the plaster mold is removed. Often long, thin pieces are cut off of the original and molded separately. Sometimes many molds are needed to recreate the original sculpture, especially large ones. (If only one cast will be made and the sculpture is made of wax or another low-melting-point material, this step may be skipped.)
3. **Wax.** Once the plaster-and-latex mold is finished, molten wax is poured into it and swished around until an even coating, usually about 1/8 inch thick, covers the inner surface of the mold. This is repeated until the desired thickness is reached.
4. **Removal of wax.** This hollow wax copy of the artwork is removed from the mold. The artist may reuse the mold to make more wax copies, but wear and tear on the mold limit their number. For small bronze artworks, a common number of copies are around 25.
5. **Chasing.** Each hollow wax copy is then "chased": a heated metal tool is used to rub out the marks that show the "parting line" or "flashing" where the pieces of the mold came together. The wax is "dressed" to hide any imperfections. The wax now looks like the finished bronze. Wax pieces that were molded separately can be heated and attached; foundries often use "registration marks" to indicate exactly where they go.
6. **Spruing.** The wax copy is "sprued" with a treelike structure of wax that will eventually provide paths for molten bronze to flow and air to escape. The carefully planned spruing usually begins at the top with a wax "cup," which is attached by wax cylinders to various points on the wax copy.
7. **Slurry.** A "sprued" wax copy is dipped into a slurry of liquid silica, then into a sand-like "stucco", or dry crystalline silica of a controlled grain size. The slurry and grit combination is called "ceramic shell" mold material, although it is not literally made of ceramic. This shell is allowed to dry, and the process is repeated until at least a half-inch coating covers the entire piece. The bigger the piece, the thicker the shell needs to be. Only the inside of the cup is not coated, and the cup's flat top serves as the base upon which the piece stands during this process.
8. **Burnout.** The ceramic shell-coated piece is placed cup-down in a kiln, whose heat hardens the silica coatings into a shell, and the wax melts and runs out. The melted wax can be recovered and reused, although often it is simply burned up. Now all that remains of the original artwork is the negative space, formerly occupied by the wax, inside the hardened ceramic shell. The feeder and vent tubes and cup are also hollow.

9. **Testing.** The ceramic shell is allowed to cool, then is tested to see if water will flow through the feeder and vent tubes as necessary. Cracks or leaks can be patched with thick refractory paste. To test the thickness, holes can be drilled into the shell, and then patched.
10. **Pouring.** The shell is reheated in the kiln to harden the patches, and then placed cup-upwards into a tub filled with sand. Bronze is melted in a crucible in a furnace, and then poured carefully into the shell. If the shell were not hot, the temperature difference would shatter it. The bronze-filled shells are allowed to cool.
11. **Release.** The shell is hammered or sand-blasted away, releasing the rough bronze. The spruing, which are also faithfully recreated in metal, are cut off, to be reused in another casting.
12. **Metal-chasing.** Just as the wax copies were "chased," the bronze copies are worked until the telltale signs of casting are removed, and the sculptures again look like the original artwork. Pits left by air bubbles in the molten bronze are filled, and the stubs of spruing filed down and polished.
13. **Patina-**The bronze is colored to the artist's preference, using chemicals applied to heated or cooled metal. Using heat is probably the most predictable method, and allows the artist to have the most control over the process. This coloring is called patina, and is often green, black, white or brownish to simulate the surfaces of ancient bronze sculptures. (Ancient bronzes gained their patinas from oxidization and other effects of being on Earth for many years.) Many recent U.S. artists prefer brighter, more stylized patinas. Patinas can replicate marble or stone. Depending on whether the metal is sandblasted or polished, the finish can be opaque or transparent. After the patina is applied, a sealer is generally applied — traditionally a coating of wax, but sometimes lacquer over more unstable patinas. This helps protect the piece from ultraviolet rays, and can slow the discoloration of patinas by oxidation.

#### 4. Bronze

**Bronze** is any of a broad range of copper alloys, usually with tin as the main additive, but sometimes with other elements such as phosphorus, manganese, aluminum, or silicon. (See table below.) It was particularly significant in antiquity, giving its name to the Bronze Age. "Bronze," in turn, is perhaps ultimately taken from the Persian word "berenj," meaning "Brass".

#### History of Bronze



Chinese vessel with interlaced dragon design, Spring and Autumn Period (722 BC-481 BC)



Assorted ancient Bronze castings found as part of a cache, probably intended for recycling

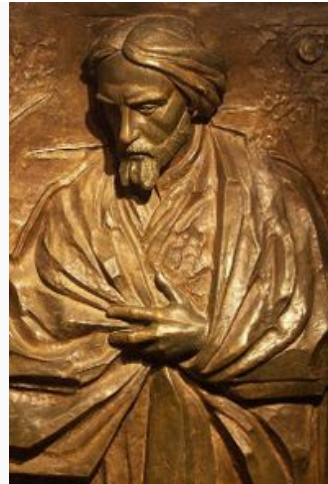
Bronze was significant to any culture that encountered it. It was one of the most innovative alloys of mankind. Tools, weapons, armor, and various building materials like decorative tiles made of bronze were harder and more durable than their stone and copper ("Chalcolithic") predecessors. In early use, the impurity arsenic sometimes created a superior alloy; this is termed arsenical bronze.

The earliest tin-alloy bronzes date to the late 4th millennium BC in Susa (Iran) and some ancient sites in Luristan (Iran) and Mesopotamia (Iraq).

While copper and tin can naturally co-occur, the two ores are rarely found together (although one ancient site in Thailand and one in Iran provide counterexamples). Serious bronze work has therefore always involved trade (and the corollary idea that there were really traders in such goods). In fact, archaeologists suspect that a serious disruption of the tin trade precipitated the transition to the Iron Age. In Europe, the major source for tin was Great Britain, where significant deposits of ore could be found in Cornwall. Phoenician traders visited Great Britain to trade goods from the Mediterranean for tin.



Ewer from 7th century Iran. Cast, chased, and inlaid bronze. New York Metropolitan Museum of Art



Fragment of the grave of Cyprian Kamil Norwid in the Bards' crypt in Wawel Cathedral, Cracow, Poland by sculptor Czesław Dźwigaj



Bronze by Ann Weaver Norton

Bronze is stronger (harder) than wrought iron, but the Bronze Age gave way to the Iron Age. That may have been because the shipping of tin around the Mediterranean (or from Great Britain) became more limited during the major population migrations around 1200 – 1100 BC, which dramatically limited supplies and raised prices.<sup>[2]</sup> Bronze was still used during the Iron Age, but for many purposes the weaker wrought iron was found to be sufficiently strong. As ironworking improved, iron became cheaper, and people figured out how to make steel, which is stronger than bronze, holding a sharper edge longer.

## Properties

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With the exception of steel, bronze is superior to iron in nearly every application. It is considerably less brittle than iron. Bronze only oxidizes superficially; once the surface oxidizes, the thin oxide layer protects the underlying metal from further corrosion. Copper-based alloys have lower melting points than steel or iron, and are more readily produced from their constituent metals. They are generally about 10 percent heavier than steel, although alloys using aluminum or silicon may be slightly less dense. Bronzes are softer and weaker than steel, bronze springs are less stiff (and so store less energy) for the same bulk. It resists corrosion (especially seawater corrosion) and metal fatigue better than steel and also conducts heat and electricity better than most steels. The cost of copper-base alloys is generally higher than that of steels but lower than that of nickel-base alloys such as stainless steel.

Copper and its alloys have a huge variety of uses that reflect their versatile physical, mechanical, and chemical properties. Some common examples are the high electrical conductivity of pure copper, the excellent deep-drawing qualities of cartridge case brass, the low-friction properties of bearing bronze, the resonant qualities of bell bronze, and the resistance to corrosion by sea water of several bronze alloys.

In the twentieth century, silicon was introduced as the primary alloying element, creating an alloy with wide application in industry and the major form used in contemporary statuary. Aluminum is also used for the structural metal aluminum bronze.

Bronze is the most popular metal for top-quality bells and cymbals, and more recently, saxophones. It is also widely used for cast metal sculpture (see bronze sculpture). Common bronze alloys often have the unusual and very desirable property of expanding slightly just before they set, thus filling in the finest details of a mould. Bronze parts are tough and typically used for bearings, clips, electrical connectors and springs.

Bronze also has very little metal-on-metal friction, which made it invaluable for the building of cannons where iron cannonballs would otherwise stick in the barrel. It is still widely used today for springs, bearings, bushings, automobile transmission pilot bearings, and similar fittings, and is particularly common in the bearings of small electric motors. Phosphor bronze is particularly suited to precision-grade bearings and springs.

Bronze is typically 88% copper and 12% tin. Alpha bronze consists of the alpha solid solution of tin in copper. Alpha bronze alloys of 4–5% tin are used to make coins, springs, turbines and blades.

Commercial bronze (otherwise known as brass) is 90% copper and 10% zinc, and contains no tin. It is stronger than copper and it has equivalent ductility. It is used for screws and wires.

Unlike steel, bronze struck against a hard surface will not generate sparks, so it (along with beryllium copper) is used to make hammers, mallets, wrenches and other durable tools to be used in explosive atmospheres or in the presence of flammable vapors.

**E. REFERENCES**

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## VII. PRE AND POST VISIT QUESTIONAIRES

### Ann Norton Sculpture Gardens Pre and Post Visitor Survey-SCIENCE

This questionnaire will enable the Ann Norton Sculpture Gardens to best serve your school and assess the success of our program. Please have your students complete the following survey before they view the ANSG's website or visit the gardens. Please send the completed surveys to the gardens one week prior to your scheduled visit. You may FAX the completed survey(s) to 561-835-9305, email to [education@ansg.org](mailto:education@ansg.org), or mail to 253 Barcelona Road, West Palm Beach, Florida 33401. Thank you.

Name of School/Organization \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Name of Teacher/Director \_\_\_\_\_

1. Have you ever visited the Ann Norton Sculpture Gardens? \_\_\_\_\_

2. What do you know about Ann Norton? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

3. Give Examples of freshwater habitats.

\_\_\_\_\_  
\_\_\_\_\_

4. What is a food chain?

\_\_\_\_\_  
\_\_\_\_\_

5. List the 5 senses.

\_\_\_\_\_  
\_\_\_\_\_

6. What is the difference between native and non-native species?

\_\_\_\_\_  
\_\_\_\_\_

7. What is a preserve?

\_\_\_\_\_  
\_\_\_\_\_

8. What is diversity?

\_\_\_\_\_  
\_\_\_\_\_

**Ann Norton Sculpture Gardens**  
**Pre and Post Visitor Survey-VISUAL ART AND LANGUAGE ARTS**

This questionnaire will enable the Ann Norton Sculpture Gardens to best serve your school and assess the success of our program. Please have your students complete the following survey before they view the ANSG's website or visit the gardens. Please send the completed surveys to the gardens one week prior to your scheduled visit. You may FAX the completed survey(s) to 561-835-9305, email to [education@ansg.org](mailto:education@ansg.org), or mail to 253 Barcelona Road, West Palm Beach, Florida 33401. Thank you.

**Name of School/Organization** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/\_\_\_\_

**Name of Teacher/Director** \_\_\_\_\_

1. **Have you ever visited the Ann Norton Sculpture Gardens?** \_\_\_\_\_
2. **What do you know about Ann Norton?** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. **List the art mediums you have worked with or seen in a museum, gallery or sculpture garden.**  
\_\_\_\_\_  
\_\_\_\_\_
4. **What is direct carving?**  
\_\_\_\_\_  
\_\_\_\_\_
5. **What is casting?**  
\_\_\_\_\_  
\_\_\_\_\_
6. **Define the difference between two-dimensional and three-dimensional objects.**  
\_\_\_\_\_  
\_\_\_\_\_
7. **List women artist you know.**  
\_\_\_\_\_  
\_\_\_\_\_
8. **List things in the environment that can impact and change outdoor art.**  
\_\_\_\_\_  
\_\_\_\_\_

## Ann Norton Sculpture Gardens Post Visit Teacher Survey

Name of School/Organization \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Name of Teacher/Director \_\_\_\_\_

This questionnaire will enable the Ann Norton Sculpture Gardens to improve our curriculum and programming. After your visit to the ANSG, please complete and return this questionnaire by Fax at 561-835-9305, email [education@ansg.org](mailto:education@ansg.org) or mail to 253 Barcelona Road, West Palm Beach, Florida 33401. Thank you.

**I. Please rate the pre-visit and visit experiences below. (1 being the lowest rating and 5 being the highest rating)**

Scheduling Your Visit	1	2	3	4	5
Teacher Pre-Visit Resource Guide on Website	1	2	3	4	5
ANSG Guided Tour	1	2	3	4	5
Workshop or Field Experience	1	2	3	4	5
The Gardens	1	2	3	4	5
The Artist's Studio	1	2	3	4	5
Payment Procedures	1	2	3	4	5
Extension Activities	1	2	3	4	5

**II. Please answer the following questions. Write N/A if the question is not applicable to your visit.**

- 1. Would you recommend the Ann Norton Sculpture Gardens to other educators or colleagues and why?**

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- 2. Would you consider the Ann Norton Sculpture Gardens as an annual visit for your students?**

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- 3. What did you and your students learn about local history?**

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- 4. What did you or your students learn about sculpture mediums and visual art methods?**

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**5. What did you or your students learn about the ecological environment at the Ann Norton Sculpture Gardens?**

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**6. What do you believe are Ann Norton's greatest contributions to our community?**

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**7. What would you like to experience or learn more about at the Ann Norton Sculpture Gardens?**

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**8. Would you be interested in developing a continuing partnership with the ANSG in environmental education or visual arts? If yes, define what you would like to see happen through a partnership.**

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