

EDUCATOR GUIDE

Story Theme: Taking Craft to the Limit
Subject: Nikolas Weinstein & Studio
Discipline: Visual Arts (Glass)

| | |
|---------------------------------------|---|
| SECTION I - OVERVIEW | 2 |
| SECTION II – CONTENT/CONTEXT | 3 |
| SECTION III – RESOURCES | 5 |
| SECTION IV– VOCABULARY | 6 |
| SECTION V – ENGAGING WITH SPARK | 8 |



Nikolas Weinstein blows a bubble with artists in his San Francisco studio.
Still image from SPARK story, February 2004.

SECTION I - OVERVIEW

EPISODE THEME

Taking Craft to the Limit

SUBJECT

Nikolas Weinstein

GRADE RANGES

K-12 & Post-secondary

CURRICULUM CONNECTIONS

Visual Arts

OBJECTIVE

To introduce glass as an art medium through the work of glass artist Nikolas Weinstein, historically situating forms of glass work (blowing, casting, cold work, etc), and providing information, resources, and discussion points for educators.

STORY SYNOPSIS

Glass artist Nikolas Weinstein stretches the creative and aesthetic possibilities of glass in his San Francisco studio, working with architects like Frank Gehry to create massive public art commissions, as well as smaller works of exquisite and fragile beauty. We visit his studio and travel along with him as he installs some of his recent work, including 2.5 tons of glass panels hanging high above customers' heads in a bank lobby in Berlin, Germany.

INSTRUCTIONAL STRATEGIES

Individual and group research
Individual and group exercises
Written research materials
Group discussions

INSTRUCTIONAL OBJECTIVES

To introduce students to the fundamentals of glass and glassmaking
To use glass as a means to explore principles of shape and form
To provide a "jumping off" point of discussion for the idea of collaboration in a studio
To be a point of access for researching the fabrication and uses of glass in history

EQUIPMENT NEEDED

SPARK story about Nikolas Weinstein on VHS or DVD and related player
Computer with Internet access, navigation software, speakers and a sound card, and color printer

MATERIALS NEEDED

Paper & pencils
Access to libraries with up-to-date collections of periodicals, books, and research papers

INTELLIGENCES ADDRESSED

Linguistic - syntax, phonology, semantics, pragmatics
Interpersonal - awareness of others' feelings, emotions, goals, motivations
Intrapersonal - awareness of one's own feelings, emotions, goals, motivations
Logical-Mathematical - ability to detect patterns, reason deductively, think logically
Visual-Spatial - the ability to manipulate and create mental images to solve problems



See more information on
Multiple Intelligences at
www.kqed.org/spark/education.

SECTION II – CONTENT/CONTEXT

CONTENT OVERVIEW

Nikolas Weinstein and the artists in the Nikolas Weinstein Studio produce glassworks for commissions, custom projects, and limited editions series. The glassworks range in style, form, and color, including architectural and contracting works, objects, and lighting pieces. The pieces vary greatly in size from just a few pounds to multiple tons. The works that Nikolas produces at the Studio are primarily “natural” forms – forms that resemble the organic shapes, forms, and colors of the natural world.

Glass is a difficult and temperamental material to work with, requiring artists to work quickly and with precision under hot and dangerous circumstances. To create works of large scale, cohesive and familiar teamwork is essential. An integral and important part of Nikolas Weinstein’s work is the collaborative teamwork of the Studio. Similar in organization to historical glassmaking guilds and studios, Nikolas Weinstein Studio consists of artists of different skill levels. Members of the Studio come from art and design programs, liberal arts degrees, construction, and glassmaking companies, bringing with them skills in design, fabrication, collaborative studio work, and fine arts that enhance the range of the Studio’s work and ability. This “guild” style studio enables those just learning about glass to learn by doing and by watching other more experienced artists.

Nikolas Weinstein Studios, [Lillium Vase](#), glass (13” h.).
Reproduced from Nikolas Weinstein Studios Web site: <http://www.nikolas.net>



In the SPARK “Taking Craft to the Limit” episode, we watch the artist and the Studio team work on two pieces: a large architectural ceiling piece and a commissioned work of strung glass beads. The chandelier was commissioned by renowned architect Frank Gehry to hang in the atrium of the DZ Bank in Berlin, Germany. The Pariser Platz 3 chandelier (named after the street on which the building is located) consists of 34 glass panels suspended on cables across a 2,000 sq. ft. glass ceiling. The chandelier weighs 2.5 tons and is designed to enhance the openness of the atrium by dispersing light without obstructing the view through the glass. Despite the word “chandelier” in its title, the panels are not lights.



Nikolas Weinstein working on a piece of the glass tube chandelier installation for the Berlin commission. Still image from SPARK story, April 2003.

Like many artists who push the boundaries of traditional materials, Weinstein continuously challenges himself to invent new processes to accomplish new ideas. For the chandelier, the Studio built a custom kiln (glass oven) to slump the panels into the desired shapes. (See the Term Sheet for a complete vocabulary list.) For the beaded piece, Weinstein created a strong armature of metal wire on which to suspend the blown glass beads.

CONTENT OVERVIEW (continued)

In both cases, Weinstein and the Studio had to solve a myriad of technical and design problems in the execution of the works, challenging the usual fabrication methods of the material.

THE BIG PICTURE

Glass is made by fusing sand (silica), potash, and soda (alkali) with lime at very high temperatures – 3000+ degrees Fahrenheit – in an oven. The color of the glass can be changed by adjusting the temperature of the furnace and/or by adding different metal oxides to the “batch” (the molten glass), such as cobalt (dark blue), tin (opaque white), or antimony or manganese for clear glass.

Most scholars date the earliest blown glass works to somewhere between the 18th and 16th century B.C. in Egypt, the earliest known examples being 3 blown glass vases bearing the inscription of Pharaoh Thoutmosis III of Egypt who reigned from 1504 - 1450 B.C. One of the most important discoveries in terms of modern glassmaking was the first use of a pipe for glassblowing, a discovery attributed to Syrian craftsmen from the Babylon area sometime around 250 B.C. This same process is the one used today, and it is shown in the SPARK story on Nikolas Weinstein.

The Romans began to use glass in architecture when they discovered how to make clear glass by adding manganese oxide to the basic mixture in 100 A.D. Rough cast glass windows began to appear in the most important buildings in Rome, Herculaneum and Pompeii around this time.

The production of sheets of glass began in the 11th century in Germany when craftsman discovered that they could make sheets or panes of flat glass by blowing a hollow glass sphere and allowing gravity to pull it into a cylinder that could be cut and laid flat. The panes of glass created by this method could then be joined with lead strips and pieced together to create windows. This laborious process and the cost of materials for glazing (as it was and is still called), restricted glass windows for the wealthy until the late Middle Ages.

THE BIG PICTURE (continued)

A form of glass art that is now widely known, stained glass did not become common until the end of the Middle Ages, when they began to be installed in churches, public buildings, inns, and the homes of the wealthy.

Glass technology improved dramatically in the 18th century with the invention of a hand-operated split mold in 1821 that ended the age of blowing individual pieces of glass. A semi-automatic bottle machine was created in 1871 that could mass-produce bottles, turning glass into something used by everyone as it is today.

Although glass today is produced rapidly and cheaply by large fabrication companies and factories, specialized studios such as Nikolas Weinstein Studio still produce custom made pieces, commissions, and limited edition works that are art and craft.

Nikolas Weinstein at work on a glass bead project in the studio. Still image from SPARK story, April 2003.



SECTION III – RESOURCES

TEXTS

Decorative Glass of the 19th and Early 20th Centuries: A Source Book. Nance Lui Fyson. David & Charles, 1997

Readings in Glass History. Volume 1 - 8. Anita Engle (ed.). Jerusalem: Phoenix Publications, 1973-77.

WEB SITES

Corning Museum of Glass
The largest and oldest collection of glass in the US, including exhibitions, history, and extensive details about the process of making and working with glass
www.cmog.org

One of the most famous glass artists, with works throughout the world, Dale Chihuly -
www.chihuly.com.

Stained Glass Association of America – Association of stained glass makers and organizations, including resources, history, and links to site for schools and further study –
<http://www.stainedglass.org>

Glass OnLine
Resource page on the history of glass, published by a professional glass industry company -
<http://www.glassonline.com/infoserv/history.html>

Nikolas Weinstein Studios
Includes images of Commissions, Limited Edition works, and custom works – <http://www.nikolas.net>

BAY AREA RESOURCES

Association of Clay and Glass Artists of California (San Carlos, CA) – Offering exhibitions, festivals, and workshops in clay and glass - www.acga.net.

Bay Area Glass Institute – A San Jose based non-profit organization dedicated to educating the public about glass, supporting glass artists, and encouraging up-and-coming artists pursue careers in glass – Classes available - <http://www.bagi.org>.

Crucible, The - Oakland-based non-profit organization offering classes in glass and neon -
<http://www.thecrucible.org/>

John Lewis Glass Studio – East Oakland artist who has been making glass works since 1969, creating gallery works and architectural projects, including part of the Oklahoma City Memorial (2000); studio visitors are welcome by appointment –
<http://www.johnlewisglass.com/>

Ohlone College (Fremont, CA) – Offering a number of classes in glass working - www.ohlone.cc.ca.us.

Public Glass – A San Francisco based non-profit organization dedicated to educating the public through exhibitions and classes in a broad range of glass-working techniques – Classes available -
www.publicglass.org.

Sharon Art Studio – Offering classes in Leaded Glass and Mosaics - Golden Gate Park, Arts & Crafts Division, McLaren Lodge, 501 Stanyan Street, San Francisco, CA 94117, (415) 753-7004 -
www.sharonartstudio.org.

Sundance Art Glass – Full service organization in Mountain View with services, supplies, and classes in a full range of glass-working, (classes are held in their Santa Cruz location) - www.artglass1.com

SECTION IV– VOCABULARY

DISCIPLINE-BASED VOCABULARY AND CONCEPTS IN THE SPARK STORY

NOTE The terms below with an asterick (*) are reprinted with permission from the Corning Museum of Glass Web site. The Corning Museum of Glass in Corning, NY is an extensive resource for educators and the public for the history of glass, glass-working, and contemporary glass art. A complete glossary of terms associated with glass and glassmaking is available at <http://www.cmog.org>.

Armature

A framework or skeleton used to support an artists work

At-the-fire*

The process of reheating a blown glass object at the glory hole during manufacture, to permit further inflation and/or manipulation with tools

Block*

A block of wood hollowed out to form a hemispherical recess. After it has been dipped in water to reduce charring and to create a "cushion" of steam, the block is used to form the gather into a sphere, prior to inflation

Blowpipe*

An iron or steel tube, usually about five feet long, for blowing glass. Blowpipes have a mouthpiece at one end and are usually fitted at the other end with a metal ring that helps to retain a gather

Bubble*

A pocket of gas trapped in glass during manufacture. The term is used for both bubbles introduced intentionally (also known as air traps or beads) and bubbles trapped accidentally during the melting process. Very small bubbles are known as seeds

Casting*

The generic name for a wide variety of techniques used to form glass in a mold

Cracking off*

The process of detaching a glass object from a blowpipe or pontil

Dynamic

Marked or defined by continuous energy or change

Finishing*

The process of completing the forming or decoration of an object. Finishing may take the form of manipulating the object into its final shape while it is hot, of cracking off prior to annealing, or of grinding, cutting or polishing

Fluid

To move or change easily or freely

Gaffer*

(English, corruption of "grandfather") The master craftsman in charge of a chair, or team, of hot-glass workers

Gather*

(Noun) A mass of molten glass (sometimes called a gob) collected on the end of a blowpipe, pontil, or gathering iron; (Verb) To collect molted glass on the end of a tool

Gathering iron*

A long, thin rod used to gather molted glass

Glass*

A homogeneous material with a random, liquid-like (non-crystalline) molecular structure. The manufacturing process requires that the raw materials be heated to a temperature sufficient to produce a completely fused melt, which, when cooled rapidly, becomes rigid without crystallizing

Glory hole*

A hole in the side of a glass furnace, used to reheat glass that is being fashioned or decorated. The glory hole is also used to fire-polish cast glass to remove imperfections remaining from the mold

Kiln*

An oven used to process a substance by burning, drying, or heating. In contemporary glass-working kilns are used to fuse enamel and for kiln forming processes such as slumping

Mold*

A form, normally made of wood or metal, used for shaping and/or decorating molten glass. Some molds (e.g., dip molds) impart a pattern to the parison, which is then withdrawn, and blown and tooled to the desired shape and size; other molds are used to give the object its final form, with or without decoration

Molten

To change from a liquid to a solid, usually with the application of heat; to dissolve

Organic

Of or relating to living organisms

Protocol

A code or formula prescribing exact adherence to specific etiquette and precedence

Render

To reproduce or represent by artistic or verbal means

Sensual

Relating to the gratification of the senses

Silica*

Silicon dioxide, a mixture that is the main ingredient of glass. The most common form of silica used in glassmaking has always been sand

Sinuuous

Of a serpentine or wavy form

Supple

Capable of being bent, folded, or twisted without damage

Torque

(Verb) To twist or turn sharply

Unfurl

To open up from a coiled, bunched, or furled state

SECTION V – ENGAGING WITH SPARK

STANDARDS-BASED ACTIVITIES AND DISCUSSION POINTS

The Glass-working Process

Ask students to work in small groups to research the primary different forms of glass-working, including blowing, molding, drawing, pressing, and casting. Each group should choose ONE process, and use the following questions to structure their inquiries.

- What are the differences between these processes?
- For each process, what different equipment is needed?
- What are the different skills needed?
- How many people are needed to accomplish a work?

Invite each group to present their findings, using illustration as much as possible. Encourage students to bring in books or photographs or other material to pass round the room after each presentation.

Focus on the different skills required and ask students to watch the SPARK episode and identify the different roles of the studio members in Nikolas Weinstein Studios. Ask students to look for these roles as they watch, and to think about how each studio member depends upon each other in the production of the works.

Challenge students to name other work situations in which people have different jobs and rely on each other.

Different Forms of Glass

Glass is made from sand (silica), potash, and soda (alkali), and lime. Challenge students to break down these ingredients into their elements, to locate the elements on the periodic table, and to then write down the chemical formula for glass.

Assign groups of students to research different forms and uses of glass in history, such as blown vases and bowls, stained glass, plate glass, glass beads, and glass art, noting how the objects were made, by who, and when. Ask students to present their findings to the class.

RELATED STANDARDS VISUAL ARTS

Kindergarten

CAREER AND CAREER-RELATED SKILLS

5.4 Discuss the various works of art (e.g., ceramics, paintings, sculpture) that artists create and the media used.

Grade 1

5.4 Describe objects designed by artists (e.g., furniture, appliances, cars) that are used at home and at school.

Grade 2

5.4 Discuss artists in the community who create different kinds of art (e.g., prints, ceramics, paintings, sculpture).

Grade 5

5.3 Research and report on what various types of artists (e.g., architects, designers, graphic artists, animators) produce and how their works play a role in our everyday environment.

Grade 7

5.4 Identify professions in or related to the visual arts and some of the specific skills needed for those professions.

Grades 9-12

5.4 Demonstrate an understanding of the various skills of an artist, art critic, art historian, art collector, art gallery owner, and philosopher of art (aesthetician).

The Glass-working Process (continued)

Move on to ask students to identify the different forms of glass in their environment at school and at home. Make a list of the forms of glass on the board. Using this guide, and the “Taking Craft to the Limit” SPARK episode, ask students to guess how each different form of glass was made – whether it was blown, molded, drawn, pressed or cast.

Exhibitions, Studios and Classes

Suggest that students visit one of the organizations or studios listed in the Resource section of this guide to observe the glass-working process and learn more about the techniques involved. Consider arranging a visit to Nicholas Weinstein’s studio to view his work first hand. This will offer students greater insight into the challenges and rewards of this art form.

For students who become particularly engaged by glass-working, draw their attention to the range of classes offered in the Bay Area in glass-working techniques, including stained glass, leaded glass and mosaic.

There is also the opportunity to view gallery works and architectural projects at the John Lewis Glass Studio – an East Oakland artist who has been making glass works since 1969, including part of the Oklahoma City Memorial (2000). Studio visitors are welcome by appointment – <http://www.johnlewisglass.com/>

SPARKLERS:

- * Encourage students to think about the difference between viewing glass-working at a studio where the process is witnessed first hand, at a gallery where the artwork is exhibited or watching the SPARK episode on Weinstein on video or DVD. Is there a difference?
- * Invite students to identify the forms in the natural world that may have inspired Weinstein’s work. Challenge students to describe the forms using descriptive adjectives to define the shapes, color, texture, size, etc. Ask students to draw the form using paper and pencil, capturing all of the elements.

For more information about SPARK and its educational content, including the Visual & Performing Arts Standards, visit the Web site at <http://www.kqed.org/spark/education>.



For more information about the California Visual & Performing Arts Standards, visit the CA Dept. of Education at <http://www.cde.ca.gov/be/st/ss/index.asp>