

## FOR STUDENTS

### Books

There are few children's books on the history and science of glass or the art of glassblowing. The following fiction and nonfiction titles are available in local libraries and may be of interest to your students.

- Branse, J.L. *A Day in the Life of a Colonial Glassblower*. New York: PowerKids Press, 2002.

This story of a young boy learning his family trade of glassblowing is a useful link to the study of American history in Grade 5. It provides details on the glass manufacturing process in an era before mass production and gives insight into the life and work of colonial Americans.

- Geeslin, Campbell. *Elena's Serenade*. New York: Atheneum Books for Young Readers, 2004.

A little girl in Mexico is determined to study glassblowing, an art practiced exclusively by men, and grows closer to her father in the process. This fanciful and well-illustrated book may appeal to younger children. It focuses on the picturesque and traditional aspects of Mexican culture, and also reinforces the importance of pursuing your dreams.

- Houston, James. *Fire Into Ice: Adventures in Glass Making*. Toronto, Ont.: Tundra Books, 1998.

Canadian author and glass artist James Houston lived in the Arctic for many years. This book explains, in part, how his glass sculptures are made and how he draws inspiration from nature and from native peoples.

- Parker, Steve. *Glass*. Milwaukee, Wis.: Gareth Stevens Publishing, 2002.

Full of amazing facts about glass, this book in the *Science Files — Materials*, series uses simple text, color photos and illustrations to explain the properties, raw materials, manufacturing processes, diverse types and uses of glass and its potential for future inventions.

## FOR TEACHERS

### Books

- Bannard, Walter Darby, and Henry Geldzahler. *Chihuly: Form From Fire*. Seattle: Portland Press, 1993.

Chihuly's artworks are illustrated by full-color images of a wide selection of Chihuly sculptures, such as the *Baskets* and *Seaforms* at the core of his work from the 1970s through the 1990s. Photographs and commentary about his large-scale architectural installations also are featured.

- Chihuly, Dale. *Baskets*. Seattle: Portland Press, 1994.

"Baskets turned out to be one of the best ideas I ever had." (Dale Chihuly)

Quotes from the author; commentary by art critics, drawings and 75 color photographs tell the story of the series of forms that was inspired by American Indian baskets and evolved into some of Chihuly's most evocative works.

- *Chihuly Baskets*. Seattle: Portland Press, 1995.

Experimenting with the *Basket* form, Chihuly attempted to strengthen glass by forcing it into a ribbed mold. The result was both strong and delicate, a fluid form with radial lines and undulating edges that suggest water, motion and marine life. Oceanographer Sylvia Earle and art historian Joan Seeman Robinson add their insights to the full-page color photographs of Chihuly's sea-like creations.

- *Chihuly Gardens and Glass*. Seattle: Portland Press, 2002.

"I want my work to appear like it came from nature so that if someone found it ... they might think it belonged there" (Dale Chihuly). More than 100 full-page color images of the artist's glass sculptures in gardens and other outdoor settings illustrate Chihuly's intent to integrate his works with nature even as their presence alters our perception of the environment.

FOR TEACHERS *continued*

- Littleton, Harvey K. *Glassblowing: A Search for Form*. New York: Van Nostrand Reinhold, 1971.  
Harvey Littleton started the first course in glassblowing at an American university and was Dale Chihuly's teacher. Littleton's insistence on the importance of glass as a medium for artistic expression in the 1960s and '70s constitutes what the artist calls a "revivalist manifesto." Color and black-and-white photos help to trace the history, materials and processes of glassblowing and demonstrate the quest to discover the essential form and nature of glass that is the hallmark of both Littleton's and Chihuly's work.
- Warmus, William. *The Essential Dale Chihuly*. New York: Harry N. Abrams, 2000.  
The small format of this book does not allow for a full presentation of images but does provide a useful overview of Chihuly's life and work. Soon to be out of print, the book may still be available in libraries and from online booksellers.

## VIDEOS

"Chihuly in Action": This 27-minute video shows the artist working with at-risk students at Hilltop Artists in Residence, a glassblowing program Chihuly started to help young people understand the importance of teamwork and personal responsibility. The video also shows him working with younger children in a drawing workshop. It is available in many libraries, **The Children's Museum** Store and from Portland Press.

## WEB SITES

■ **Dale Chihuly — Artist:**

[www.chihuly.com](http://www.chihuly.com)

The artist's Web site provides a comprehensive overview of his work, including his biography, the development of his series of forms, the role of drawing in his art, the creation of his major installations and statements about his artistic vision.

This is the site to find beautiful images of Chihuly's diverse and fascinating works.

■ **Corning Museum of Glass:**

[www.cmog.org](http://www.cmog.org)

The collections of the Corning Museum represent 3,500 years of glassmaking and glassblowing from ancient Egypt to the 20th century and beyond. The [Research and Learn](#) page of the Web site provides an extensive and downloadable *Resource on Glass* with background information, a glossary and answers to questions frequently asked by teachers and students.

■ **Museum of Glass:**

[www.museumofglass.org](http://www.museumofglass.org)

Click on [The Building](#) page of this site, which features Chihuly's *Bridge of Glass* and information about the museum's *Hot Shop*, including a glossary of glassblowing terms. The [Education](#) page provides a *Virtual Hot Shop* with videos, information and an interactive glassblowing activity.

■ **Portland Press:**

[www.portlandpress.net](http://www.portlandpress.net)

Chihuly's Seattle-based publishing house provides a wealth of images as well as information on how to order books, DVDs, videos, stationery, calendars, posters and prints. Images in all publications meet Chihuly's high standards for quality.

■ **The Children's Museum of Indianapolis:**

[www.childrensmuseum.org](http://www.childrensmuseum.org)

Visit the museum's Web site and click on **Fireworks of Glass** for information on Dale Chihuly and his work, the **Fireworks of Glass Tower** and *Ceiling*, and interactive experiences for children, families and classrooms.

## EXHIBITS

For a schedule of current and future exhibits of Chihuly's work, visit the artist's Web site at [www.chihuly.com/schedule.html](http://www.chihuly.com/schedule.html)

### Chihuly in Indiana

Individual Chihuly works are part of both private and museum collections in Indiana. Significant exhibitions also have taken place at several museums in the past. In addition to the **Fireworks of Glass Tower** and **Ceiling** at **The Children's Museum**, Chihuly works may be seen at the following locations:

- Ball State Museum of Art, Muncie, *Basket set*
- Brauer Museum of Art, Valparaiso University
- Columbus Museum of Art and Design
- Columbus Visitors Center, *Yellow Neon Chandelier*
- Eiteljorg Museum of American Indian and Western Art, Indianapolis
- Fort Wayne Museum of Art, The George R. Stroemple Collection
- Indiana University School of Medicine, VanNuys Medical Sciences Building, Indianapolis, *DNA Tower*
- Indianapolis Museum of Art

### Chihuly Across America

Dale Chihuly's works are part of the collections of many museums and galleries across the country. The following institutions have substantial permanent Chihuly collections on display:

- Colorado Springs Fine Arts Center (Opening Fall 2006)
- Oklahoma City Museum of Art
- Franklin Park Conservatory, Columbus, Ohio
- Tacoma Art Museum, Tacoma, Washington
- Toledo Museum of Art, Toledo, Ohio

Many other locations have at least one major piece, such as a *Chandelier*, on permanent display, including the following museums:

- Birmingham Museum of Art, Birmingham, Alabama
- Clinton Library and Archives, Little Rock, Arkansas
- San Jose Museum of Art, San Jose, California
- Delaware Art Museum, Wilmington, Delaware
- Naples Museum of Art, Naples, Florida
- Wichita Art Museum, Wichita, Kansas
- Kalamazoo Institute of Arts, Kalamazoo, Michigan
- Minneapolis Institute of Arts, Minneapolis, Minnesota
- Kemper Museum of Contemporary Art, Kansas City, Missouri

- St. Louis Art Museum, St. Louis, Missouri
- Joslyn Art Museum, Omaha, Nebraska
- Corning Museum of Glass, Corning, New York
- Cincinnati Art Museum, Cincinnati, Ohio
- Columbus Museum of Art, Columbus, Ohio
- Oklahoma City Museum of Art, Oklahoma City, Oklahoma
- National Liberty Museum, Philadelphia, Pennsylvania
- Dallas Museum of Art, Dallas Texas
- San Antonio Museum of Art, San Antonio, Texas
- Milwaukee Art Museum, Milwaukee, Wisconsin

## GLOSSARY

- abstract** — a style in which the artist simplifies, leaves out or rearranges elements of a subject to the point that it may not be recognizable
- ancient** — from a long time ago; having lasted for a very long time
- armature** — a core or framework, similar to a skeleton, to support a sculpture
- assemblage** — a three-dimensional work of art made by joining many pieces together
- benefits** — the positive contributions resulting from some action
- chandelier** — a decorative light that hangs from the ceiling and has several branch-like parts for holding bulbs. Chihuly has developed the *Chandelier* as a sculptural form made up of many glass pieces that reflect light rather than using light bulbs.
- collection** — a group of objects of one type that have been collected by one person or in one place
- construct** — to build something or put together different parts to form something
- elements of design** — the visual “tools” artists use to create art, including line, shape, form, color, space and texture
- engineer** — a person who uses science and math to design and build structures
- environment** — the surroundings in an indoor or outdoor space; the complex interaction of physical and biological factors in nature
- fireworks** — devices filled with flammable chemicals that produce bright displays of colored patterns or loud noises when they explode
- form** — an element of design; any three-dimensional object that has height, width and depth, such as a cube, sphere or cylinder
- fragile** — easily damaged, broken or harmed
- frits or jimmies** — coarsely ground bits of colored glass. A glassblower will dip a gather of glass into a pile of frits or roll the hot glass over frits that have been spread on a steel table called a marver. This creates spots or speckles of color in the piece.
- furnace** — an enclosed structure heated to a very high temperature so that substances put inside, such as glass, will melt or burn
- gas** — a fluid substance such as air that when unconstrained does not have shape or volume and tends to expand indefinitely
- gaffer** — the leader of a glassblowing team and the person in charge of a glass piece that is being created
- geometric** — related to the branch of mathematics that deals with measurement, properties and relationships or points, lines, angles, surfaces and solids. Geometric shapes include circles, squares, triangles, etc. Geometric forms include spheres, cubes, pyramids, etc.
- glass** — a hard transparent material made from silica sand that is used to make different objects
- glassblowing** — blowing air into a tube to form heated glass into objects.
- gravity** — the force that attracts objects to each other, especially the force that makes things fall to the ground
- hot shop** — a facility with a furnace, gas-fed heating chambers, a temperature-controlled annealing oven and other equipment, where glassblowers create works made from glass
- ingredients** — materials or components that make up any mixture or combination
- innovative** — using new methods and ideas
- intermediate color** — a color made by mixing a secondary color with a primary color
- installation** — arrangements of art objects in galleries, museums or outdoors. Installations are often planned with a specific environment in mind and designed so that the work and the space interact with each other in dynamic ways.
- interact** — the way two or more objects or substances act or react to affect each other
- liquid** — a substance, such as water, that is not a solid or gas and that flows freely
- Macchia** — a Chihuly glass form characterized by its layers of opaque color and colored spots, based on the word

for “spot” or “spotted” in Italian

**maestro** — teacher or maste; a very skilled person; the leader of a glass-blowing team

**marver** — a smooth, flat steel plate on which glass is rolled.

**matter** — physical substances in the universe

**medium, media** — the material(s) for creating artworks

**mold** — a hollow container with a particular shape into which soft or liquid substances are poured, so that the substances harden and take the shape of the container

**molten** — metal, rock or glass in a liquid state because of great heat

**multiples** — many items of the same type or different types

**natural** — existing in or produced by nature; not artificial

**officials** — the members of an institution who manage facilities, budgets and information

**opaque** — preventing rays of light from passing through, and therefore not transparent

**organic** — being or coming from living plants and animals. Organic shapes and forms are irregular, such as things in nature.

**pattern** — a choice of lines, colors or shapes repeated in a planned way

**permanent** — lasting a long time

**primary colors** — the three colors (red, yellow and blue) that can be mixed together in different ways to make other colors.

**principles of design** — the way elements of design are combined or organized: balance, unity, variety, emphasis, pattern, movement and rhythm

**properties** — qualities of a substance or material that can be used in a particular way

**revive** — to bring back from an unused state

**scale** — a proportion of two sets of dimensions, such as the relationship between a model or drawing and the original object

**sculpture** — an artwork that has three dimensions: height, width and depth or thickness

**secondary colors** — colors made by mixing two of the primary colors

**setting** — the environment or surroundings for an artwork or literary work

**shape** — a flat or two-dimensional figure that may be geometric (square, circle, triangle) or organic (irregular in outline)

**site** — the piece of land or other area where something will be located

**sketch** — a preliminary drawing used in planning an artwork

**solid** — a substance that is not liquid or gas

**space** — an empty area that is available to be used

**structure** — the way in which the parts of a system or object are arranged or organized, or a system arranged in this way

**temporary** — not lasting or not needed for a long time

**texture** — the way a surface feels or appears to feel, sensed by touch or sight

**tower** — a tall narrow structure, often square or circular, which is either a part of a building or stands alone

**trade blankets** — blankets using American Indian designs manufactured by other Americans in the 19th and early 20th centuries for the purposes of trade with native peoples

**transform** — to change completely the appearance or character of something or someone

**translucent** — allowing some light through

**transparent** — allowing most light through so that a material can be seen through easily

## INDIANA ACADEMIC STANDARDS

### Grade 3 Language Arts Standards Comprehension and Analysis of Grade-Level-Appropriate Text

3.2.2 Ask questions and support answers by connecting prior knowledge with literal information from the text.

3.2.3 Show understanding by identifying answers in the text.

#### Organization and Focus

3.4.1 Find ideas for writing stories and descriptions in conversations with others; in books, magazines, or school textbooks; or on the Internet.

3.4.2 Discuss ideas for writing, use diagrams and charts to develop ideas, and make a list or notebook of ideas.

3.4.3 Create single paragraphs with topic sentences and simple supporting facts and details.

#### Research and Technology

3.4.4 Use various reference materials (such as a dictionary, thesaurus, atlas, encyclopedia, and online resources).

#### Different Types of Writing and Their Characteristics

3.5.2 Write descriptive pieces about people, places, things, or experiences that develop a unified main idea and use details to support the main idea.

3.5.4 Use varied word choices to make writing interesting.

#### Organization and Delivery of Oral Communication

3.7.5 Organize ideas chronologically (in the order that they happened) or around major points of information.

3.7.7 Use clear and specific vocabulary to communicate ideas and establish the tone.

### Grade 4 Language Arts Standards Structural Features of Informational and Technical Materials

4.2.1 Use the organization of informational text to strengthen comprehension.

4.2.2 Use appropriate strategies when reading for different purposes.

#### Organization and Focus

4.4.1 Discuss ideas for writing. Find ideas for writing in conversations with others and in books, magazines, newspapers, school textbooks, or on the Internet. Keep a list or notebook of ideas.

4.4.2 Select a focus, an organizational structure, and a point of view based upon purpose, audience, length, and format requirements for a piece of writing.

4.4.4 Use common organizational structures for providing information in writing, such as chronological order, cause and effect, or similarity and difference, and posing and answering a question.

#### Research and Technology

4.4.7 Use multiple reference materials and online information (the Internet) as aids to writing.

#### Different Types of Writing and Their Characteristics

4.5.1 Write narratives (stories) that include ideas, observations, or memories of an event or experience; provide a context to allow the reader to imagine the world of the event or experience; and use concrete sensory details.

4.5.5 Use varied word choices to make writing interesting.

#### Organization and Delivery of Oral Communication

4.7.5 Present effective introductions and conclusions that guide and inform the listener's understanding of important ideas and details.

4.7.8 Use details, examples, anecdotes

(stories of a specific event), or experiences to explain or clarify information.

4.7.9 Engage the audience with appropriate words, facial expressions, and gestures.

### Grade 5 Language Arts Standards Comprehension and Analysis of Grade-Level-Appropriate Text

5.2.3 Recognize main ideas presented in texts, identifying and assessing evidence that supports those ideas.

5.2.4 Draw inferences, conclusions, or generalizations about text and support them with textual evidence and prior knowledge.

#### Organization and Focus

5.4.1 Discuss ideas for writing, keep a list or notebook of ideas, and use graphic organizers to plan writing.

#### Different Types of Writing and Their Characteristics

5.5.5 Use varied word choices to make writing interesting.

#### Organization and Delivery of Oral Communication

5.7.4 Select a focus, organizational structure, and point of view for an oral presentation.

5.7.5 Clarify and support spoken ideas with evidence and examples.

5.7.6 Use volume, phrasing, timing, and gestures appropriately to enhance meaning.

### Grade 3 Science Standards Scientific Inquiry

3.1.2 Participate in different types of guided scientific investigations such as observing objects and events and collecting specimens for analysis.

3.1.3 Keep and report records of investigations and observations using tools, such as journals, charts, graphs, and

computers.

### **Technology and Science**

3.1.7 Recognize that and explain how an invention can be used in different ways, such as a radio being used to get information and for entertainment.

### **Manipulation and Observation**

3.2.3 Keep a notebook that describes observations and is understandable weeks or months later.

3.2.4 Appropriately use simple tools, such as clamps, rulers, scissors, hand lenses, and other technology, such as calculators and computers, to help solve problems.

### **The Mathematical World — Numbers**

3.5.1 Select and use appropriate measuring units, such as centimeters (cm) and meters (m), grams (g) and kilograms (kg), and degrees Celsius (?C).

### **Common Themes — Models and Scale**

3.6.3 Explain how a model of something is different from the real thing but can be used to learn something about the real thing.

## **Grade 4 Science Standards**

### **Technology and Science**

4.1.5 Demonstrate how measuring instruments, such as microscopes, telescopes, and cameras, can be used to gather accurate information for making scientific comparisons of objects and events. Note that measuring instruments, such as rulers, can also be used for designing and constructing things that will work properly.

### **Computation and Estimation**

4.2.1 Judge whether measurements and computations of quantities, such as length, area, volume, weight, or time, are reasonable.

4.2.5 Write descriptions of investigations, using observations and other evidence as support for explanations.

### **Earth and the Processes That Shape It**

4.3.5 Describe how waves, wind, water, and glacial ice shape and reshape the Earth's land surface by the erosion of rock and soil in some areas and depositing them in other areas.

4.3.6 Recognize and describe that rock is composed of different combinations of minerals.

### **Common Themes — Models and Scale**

4.6.3 Recognize that and describe how changes made to a model can help predict how the real thing can be altered.

## **Grade 5 Science Standards**

### **Technology and Science**

5.1.7 Give examples of materials not present in nature, such as cloth, plastic, and concrete, that have become available because of science and technology.

### **Manipulation and Observation**

5.2.4 Keep a notebook to record observations and be able to distinguish inferences from actual observations.

### **Earth and the Processes That Shape It**

5.3.4 Investigate that when liquid water disappears it turns into a gas (vapor) mixed into the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.

### **Matter and Energy**

5.3.8 Investigate, observe, and describe that heating and cooling cause changes in the properties of materials, such as water turning into steam by boiling and water turning into ice by freezing. Notice that many kinds of changes occur faster at

higher temperatures.

5.3.9 Investigate, observe, and describe that when warmer things are put with cooler ones, the warm ones lose heat\* and the cool ones gain it until they are all at the same temperature. Demonstrate that a warmer object can warm a cooler one by contact or at a distance.

## **Grade 3 Social Studies Standards**

### **The World in Spatial Terms**

3.3.1 Distinguish between physical and political features on maps and globes and label a map of North America identifying countries, oceans, major rivers, the Great Lakes, and mountain ranges. Locate the United States, Indiana, and the local community.

### **Places and Regions**

3.3.3 Explain that regions are areas that have similar physical and cultural characteristics and locate the local community in a specific region.

3.5.3 Examine the contributions of individual artists (painters, sculptors, writers, musicians, and traditional artists) in enriching the culture of the community.

3.5.5 Use community resources — such as museums, libraries, historic buildings, and other landmarks — to gather cultural information about the community.

## **Grade 5 Social Studies Standards**

### **Places and Regions**

5.3.2 Use community resources — such as museums, libraries, historic buildings, and other landmarks — to gather cultural information about the community.

## Grade 3 Visual Arts Standards

### Responding to Art: History

3.1.1 Identify visual clues in works of art and artifacts that reflect characteristics of a given culture and speculate on where, when and by whom the work was made.

3.1.2 Speculate on the function or purpose of a work of art and make connections to the culture.

3.2.2 Identify and distinguish between realistic, abstract, and non-objective works of art.

3.2.3 Describe clues found in a work of art or artifact that determine if the work is old or new.

### Responding to Art: Criticism

3.3.1 Identify and describe sensory, formal, technical and expressive properties in the work.

3.3.3 Use appropriate art vocabulary.

3.4.1 Listen to multiple responses to a work of art by people from the art world (historians, critics, philosophers, curators) then identify criteria used by these people in making informed judgements.

### Responding to Art: Aesthetics

3.6.2 Reflect on personal response to a work of art and identify personal preference.

### Creating Art: Production

3.7.1 Demonstrate observational skills in the production of artwork.

3.8.1 Apply elements (line, shape, form, texture, color and space) and principles (repetition, variety, rhythm, proportion, movement, balance, emphasis) in their work that effectively communicates their ideas.

3.8.2 Identify and discriminate between types of shape (geometric and organic), colors (primary, secondary, complementary), lines (characteristics and qualities), textures (tactile and visual), and

space

(placement/overlapping/negative/positive/size), in their work and the works of others.

3.9.1 Identify differences between media and the visual characteristics of each medium.

3.9.2 Identify and control different media, techniques and processes to effectively communicate ideas, experiences, and stories.

3.10.1 Demonstrate evidence of reflection, refinement and care in completion of work.

3.10.2 Identify and apply assessment criteria for studio work (craftsmanship, control of media, communication of ideas) and reflect on the evidence of those qualities in their work.

### Careers and Community

3.11.1 Identify the roles of artists, docents, guards, and curators at museums and galleries.

3.12.1 Identify individual art experiences and how these affect daily life.

## Grade 4 Visual Arts Standards

### Responding to Art: History

4.1.1 Identify the relationship between a work of art and the geography and characteristics of the culture; and identify where, when and by whom the work was made (focus: Indiana history).

4.2.2 Identify styles of works of art as belonging to a specific culture and place.

4.2.3 Distinguish between contemporary and traditional works of art and identify characteristics of both.

### Responding to Art: Criticism

4.3.1 Analyze sensory, formal, technical and expressive properties in a work of art.

4.3.3 Use appropriate art vocabulary.

### Responding to Art: Aesthetics

4.6.2 Understand that personal preference is one of many criteria used in making informed judgments.

### Creating Art: Production

4.7.1 Demonstrate refined observational skills in their work.

4.8.1 Apply elements (line, shape, form, texture, color and space) and principles (repetition, variety, rhythm, proportion, movement, balance, emphasis) in work that effectively communicates their ideas.

4.8.2 Identify and discriminate between types of shape (geometric and organic), colors (primary, secondary, complementary, tints, and shades), lines (characteristics, quality), textures (tactile and visual), and space (placement, perspective, overlap, negative, positive, size), balance (symmetrical, asymmetrical, radial) and the use of proportion, rhythm, variety, repetition, and movement in their work and the works of others.

4.9.1 Identify differences between media and the visual characteristics of each medium.

4.9.2 Identify and control different media, techniques and processes to effectively communicate ideas, experiences and stories.

4.10.1 Demonstrate the ability to successfully generate an idea, select and refine an idea, and execute the idea.

4.10.2 Identify and apply criteria for assessment in their work, in peer critiques, and in self-assessment.

### Careers and Community

4.11.2 Identify various opportunities in art related careers (historian, critic, curator, gallery director, display artist, website designer, graphic artist etc).

**Grade 5 Visual Arts Standards**

**Responding to Art: History**

5.1.1 Identify the relationship between a work of art and the geography and characteristics of the culture, and identify where, when, why and by whom the work was made (focus: North America).

5.2.2 Identify distinguishing characteristics of style in individual artists work and art movements.

**Responding to Art: Criticism**

5.3.1 Analyze the artist’s use of sensory, formal, technical and expressive properties in a work of art.

5.3.3 Use appropriate art vocabulary.

**Responding to Art: Aesthetics**

5.6.2 Understand that personal preference is one of many criteria used in making judgments about art.

**Creating Art: Production**

5.7.1 Demonstrate refined observational skills through accurate rendering of representational objects and subject matter from life.

5.8.1 Apply elements (line, shape, form, texture, color, value and space) and principles (repetition, variety, rhythm, proportion, movement, balance, emphasis and unity) in work that effectively communicates their ideas.

5.8.2 Identify and discriminate between types of shape (geometric and organic), colors (primary, secondary, complementary, intermediates, neutrals, tints, tones, shades, and values), lines (characteristics, quality), textures (tactile and visual), and space (background, middleground, foreground, placement, perspective, overlap, negative, converging lines positive, size, color), balance (symmetrical, asymmetrical, radial) and the use of proportion, rhythm, variety, repetition, and movement in their work and the works of others.

5.9.1 Discriminate between visual characteristics of a variety of media and selectively use these in their work.

5.9.2 Identify and control different media, techniques and processes to effectively communicate ideas, experiences, and stories.

5.10.1 Demonstrate evidence of reflection, thoughtfulness and care in selecting ideas and completing work.

5.10.2 Identify and apply criteria for assessment in their work, in peer critiques, and in self-assessment.

**Careers and Community**

5.11.2 Identify various responsibilities of selected careers in art (illustrator, costume and set designer, sculptor, display designer, painter, graphic designer, animator, visual editor).

**NATIONAL ACADEMIC STANDARDS**

**National English Language Arts Standards**

**Content Standard 1:** Students read a wide range of print and non-print texts to build an understanding of texts, themselves and the cultures of the United States and the world; to acquire new information; to respond to the needs of and demands of society and the workplace; and for personal fulfillment.

**Content Standard 3:** Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts.

**Content Standard 4:** Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.

**Content Standard 5:** Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

**Content Standard 7:** Students conduct research on issues and interests by generating ideas and questions and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

**Content Standard 8:** Students use a variety of technological and informational resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

**Content Standard 12:** Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

**National Arts Education Standards**

**Visual Arts K-4**

**Content Standard 1:** Understanding and applying media, techniques and processes

- a) know the difference in materials, techniques and processes
- c) use different media, techniques and processes to communicate ideas, experiences and stories
- d) use art materials and tools in a safe, responsible manner

**Content Standard 2:** Using knowledge of structures and functions

- a) know the differences among visual characteristics and purposes of art in

order to convey ideas

- b) describe how different expressive features and organizational principles cause different responses
- c) use visual structures and functions of art to communicate ideas

**Content Standard 3:** Choosing and evaluating a range of subject matter, symbols and ideas

- a) explore and understand prospective content for works of art
- b) select and use subject matter, symbols and ideas to communicate meaning

**Content Standard 5:** Reflecting upon and assessing the characteristics and merits of their work and the work of others

- a) understand there are various purposes for creating works of visual art
- c) understand there are different responses to specific artworks

### Visual Arts 5-8

**Content Standard 1:** Understanding and applying media, techniques and processes

- a) apply media, techniques and processes with sufficient skill, confidence and sensitivity so that their intentions are carried out in their artworks
- b) conceive and create works of visual art that demonstrate an understanding of how the communication of their ideas relates to the media, techniques and processes they use

**Content Standard 2:** Using knowledge of structures and functions

- b) evaluate the effectiveness of artworks in terms of organizational structures and functions
- c) create artworks that use organizational principles and functions to solve specific visual arts problems

**Content Standard 3:** Choosing and evaluating a ranges of subject matter, symbols and ideas

- b) apply subjects, symbols and ideas in their artworks and use the skills gained to solve problems in daily life

**Content Standard 5:** Reflecting upon and assessing the characteristics and merits of their work and the work of others

- b) describe meanings of artworks by analyzing how specific works are created and how they relate to historical and cultural contexts
- c) reflect analytically on various interpretations as a means for understanding and evaluating works of visual art

### National Science Education Standards

#### Content Standards K-4

#### Content Standard A — Science as Inquiry:

As a result of activities in grades K-4, all students should develop Abilities necessary to do scientific inquiry Understanding about scientific inquiry

**Content Standard B —** As a result of the activities in grades K-4, all students should develop an understanding of

- Properties of objects and materials
- Position and motion of objects
- Light, heat, electricity, and magnetism

#### Content Standard E — Science and Technology:

As a result of activities in grades K-4, all students should develop

Understanding about science and technology

Abilities to distinguish between natural objects and objects made by humans

**Content Standards G — History and Nature of Science:** As a result of activities in grades K-4, all students

should develop understanding of Science as a human endeavor

#### Content Standards: 5-8

#### Content Standard A — Science as Inquiry:

As a result of activities in grades 5-8, all students should develop Abilities necessary to do scientific inquiry Understanding about scientific inquiry

**Content Standard B —** As a result of their activities in grades 5-8, all students should develop an understanding of

- Properties and changes of properties in matter
- Motions and forces
- Transfer of energy

#### Content Standard E — Science and Technology:

As a result of activities in grades 5-8, all students should develop

Understanding about science and technology

#### Content Standards G — History and Nature of Science:

As a result of activities in grades 5-8, all students should develop understanding of

- Science as a human endeavor
- Nature of science
- History of science

### National Social Studies Standards

**Content Standard 1:** Students can explain and give examples of how language, literature, the arts, architecture, other artifacts, traditions, beliefs, values, and behaviors contribute to the development and transmission of culture.

**Content Standard 4:** Students can relate personal changes to social, cultural, and historical contexts; describe personal connections to place as associated with community, nation, and world. They work independently and cooperatively to accomplish goals.



Photo by Terry Rishel, Chihuly Studio, 2006

The **Fireworks of Glass** Tower (Detail), *The Children's Museum of Indianapolis*, 2006



Photo by Teresa N. Rishel, Chihuly Studio, 2006

The **Fireworks of Glass** Tower and Ceiling, *The Children's Museum of Indianapolis*, 2006



*Dale Chihuly, Pendleton Blanket Collection, The Boathouse, Seattle, Washington.*

Photo courtesy of Brian Sullivan



Photo by Kevin Carter, The Children's Museum of Indianapolis, 2006

*Dale Chihuly, Collection of American Indian Baskets, The Boathouse, Seattle, Washington.*



Photo by Chihuly Studio

Dale Chihuly, Cadmium Yellow Seaform Set With Red Lip Wraps, 1989, 13" x 33" x 16".



Photo by Claire Garouste, Chihuly Studio

*Dale Chihuly, Alabaster Basket Set With Oxblood Lip Wraps, 1991, 18" x 27" x 21".*



Collection of the Corning Museum of Glass, Corning, NY (66.1.2.13)

Vase, Egypt, 18th dynasty, about 1400–1300 B.C., Opaque turquoise, white, yellow and dark blue glass; core-formed, applied | 1.10.7cm.

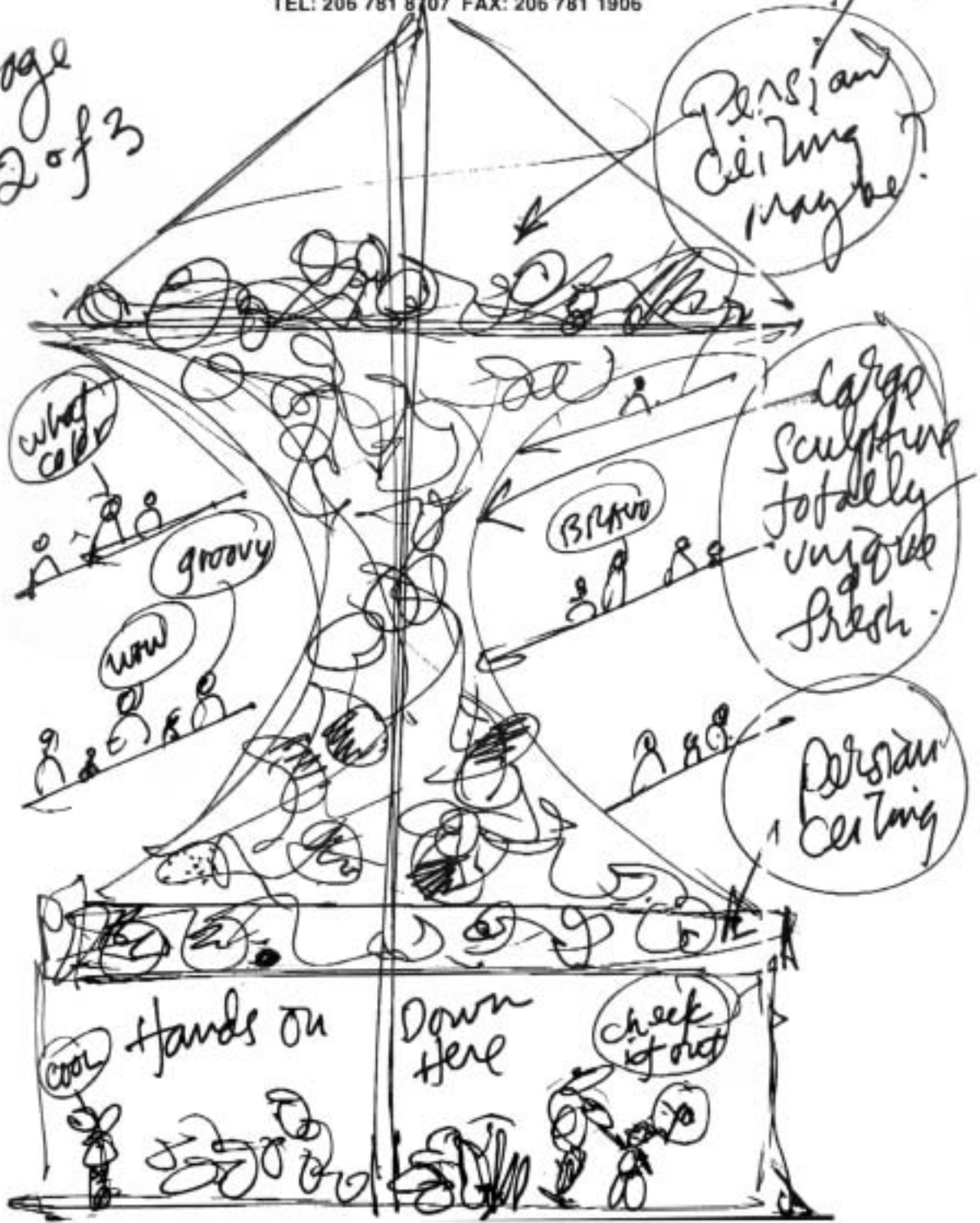


Photo by Claire Geroutte, Chihuly Studio

*Dale Chihuly, Pale Yellow Macchia With Red Lip Wraps, 1986, 20" x 22" x 21".*

THE CHILDREN'S MUSEUM - Chihuly June 7/01  
CHIHULY STUDIO 1111 NW 50TH STREET SEATTLE, WA 98107-5120  
TEL: 206 781 8707 FAX: 206 781 1906

Page 2 of 3



Dale Chihuly, Drawing for the **Fireworks of Glass** Tower and Ceiling, graphite pencil on paper, June 2001.

Chihuly Studio



The Children's Museum of Indianapolis, 2006

*Before: The empty core of The Children's Museum waits for Chihuly's installation of the **Fireworks of Glass Tower and Ceiling.***