Museums and Preservation

Objectives

- Students will be able to define what a museum is, in his/her own words
- Students will be able to name at least one threat to a museum object in a collection
- Students will be able to give examples of how a museum preserves collections
- Students will be able to demonstrate proper museum etiquette

Background

As a unit of the National Park Service, the Carl Sandburg Home National Historic Site is obligated by law to preserve and protect its natural and cultural resources including a significant museum collection of over 300,000 objects. This large collection includes the Sandburg family's household furnishings, library, personal papers, farm tools and equipment, clothing, and memorabilia. This unit will introduce students to the challenges National Park Service Museum Professionals (those with a higher education degree in the areas of Archeology, American Studies, Art History, Decorative Arts, Museum Studies, or History) face in preserving these important cultural resources. It will provide students with an understanding of how museums care for and sustain the longevity of nationally significant museum collections. Finally, this unit will test a student's knowledge about "Museum Etiquette", or the proper ways to conduct oneself when visiting a museum. The following is an excerpt from the National Park Service Museum Handbook, Part 1:

In 1895, George Brown Goode defined a museum as "an institution for the preservation of those objects which best illustrate the phenomena of nature and the works of humankind, and the utilization of these for the increase in knowledge of the people." The American Association of Museums further defines a museum as "an organized and permanent non-profit institution, essentially educational or aesthetic in purpose, with professional staff, which owns and utilizes tangible objects, cares for them, and exhibits them to the public on some regular schedule." Both of these definitions contain important qualifiers that distinguish museums from exhibit galleries or curio collections. All museums share certain critical responsibilities.

Primary responsibilities, which are common to all museums, include the collection, preservation, study, and interpretation of objects in perpetuity. Successful attainment of each of these tasks involves professional standards and duties to ensure that these obligations are fulfilled.

The collection is central to any museum. Museums serve as repositories for objects that document our natural and cultural heritage. The collection should have a defined scope, a specific written policy outlining what the museum will and will not collect. The objects, whether cultural or natural history, are inherently valuable for the information that they provide about processes, events, and interactions among cultures, individuals, and the environment. Placing objects within a broader context, through research, analysis and documentary records, provides for the greatest enjoyment and benefit by the public.

All museums accept certain responsibilities toward their collections. The first obligation is to collect objects of interest and importance within the scope of the institution. The collection is the foundation of the museum. The collection is also a non-renewable resource, impossible to replace once destroyed. Thus, the second obligation is to preserve the collection. Preservation ensures that the collection can continue to provide education and enjoyment into the future. The value of museum specimens is lost or substantially reduced if they, or data inherent in them, are altered; therefore, objects must be kept intact and in a condition as close to their original state as possible. Preservation allows the third and final obligation – interpretation – to proceed with confidence. Interpretation includes research and presentation. Active research realizes the collection's potential as a learning tool. Investigation into the history and use of an object allows it to be displayed within the context in which it was originally used. The educational and interpretive aspects of the collection must be realized and fulfilled. Exhibits encourage visitors to explore the ways individuals and societies perceive themselves and the world in which they live. Displayed in context, the object or specimen communicates information and concepts, and helps to demonstrate the reality of lifeways in the past.

Cataloging and Record Keeping

Background

All museums, National Parks, historic homes, etc. have collections that tell their story. These museum collections must be cataloged for the purpose of managing the care and use of each object and for achieving accountability for the museum collection. Museum professionals use a classification system to communicate a set of standards much like scientists use classification systems for plants and animals. For example, if a museum professional needed to catalog a bone fragment, the book, *Chenhall's Nomenclature,* gives information on how that particular bone fragment should be cataloged.

Procedures

NOTE: Cataloging is always done in pencil so ink does not damage item being cataloged. Information collected is then transferred to a permanent, computer data system.

1. Discuss background statement, including the word "accountability".
2. Discuss what cataloging is (standardized record keeping system which identifies each object and records the location description, condition/damage, origin and maker of each object.)
3. Discuss: How is this similar to a card catalog in a library? How does it differ? What if everything were just shelved any which way, without an organized plan? Even stores keep inventory. Everything has a code for the scanner. Everything has a set place for display. Elicit student examples (music store, shoe stores, hardware, grocery store).
4. Distribute sample Museum Catalog Record Worksheet (blank), or use overhead projector. Comment on how much time this must take, how much information is required. Then distribute or project completed sample of Museum Catalog Record Worksheet and discuss fields and their purposes.
5. Discuss the need for the information on catalog records to be standardized.
6. Announce class project: Each student will catalog a collection, such as all of their clothes, baseball cards, CDs, books, sporting goods including awards and

Subjects
Language Arts
Science
Math
Social Studies
Technology

Materials
- ❑ pencils
- ❑ paper
- ❑ ruler in centimeters
- ❑ computer disc (optional)

Handouts
- ❑ blank Museum Catalog Record Worksheet
- ❑ completed Museum Catalog Record Worksheet
- ❑ vocabulary list

Teaching Techniques

Lecture

Writing assignment(s)

Handout(s)

Class discussion

Small group discussion

Internet search

trophies, household goods, rock collections, leaf collections, etc. Limit the collection to ten items.

7. As a class, develop and design record worksheet for the standardization of their class project. Suggested time frame: 1-2 weeks for completion of project.

Modification

- Enter web page for Museum Document Association's web site and report findings to class.

Department of the Interior
National Park Service

Museum Catalog Record Worksheet — Cultural Resources

Classification | Object Location | Ctrl Prop

Object Status | Year | Catalog Number | Accession Number

–

Object | Item Count | Item Qty

Description

1.

2.

3.

4.

5.

6.

Site of Original Collection/Provenience

Field Site # | State Site # | Within Site Provenience

Site of Origin County | State | County/City | Other

Object Date | Dimensions/Weight | Medium/Materials | Condition

Artist/Maker

Cataloger Name | Date Catalogued | Current Value

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Museum Catalog Record Worksheet — Cultural Resources

Classification			Object Location	Ctrl Prop
H	CA	CA04	H S 4 Doc Box B5MT - 5	N

Object Status	Year	Catalog Number	Accession Number
S	1994	106191	_ 86

Object	Item Count	Item Qty
Newspaper	1	

Description

1. Union Leader, the Vol. 31, No. 6 p. 8.

2. Photo of CS & the beardles Lincoln on p. 1

3. Review of "Abraham Lincoln: The Prairie years" by CS on p. 1

4. brittle, extremely browned

5.

6.

Site of Original Collection/Provenience

Field Site #	State Site #	Within Site Provenience
		H S Rm 018 B - IV - 3A

Site of Origin	County	State	County/City	Other
		Il	Chicago	

Object Date	Dimensions/Weight	Medium/Materials	Condition
08 Feb 1930	L 38.8, W 26.8 cm	paper	13

Artist/Maker
St + Elec Railway Emps of Am

Cataloger Name	Date Catalogued	Current Value
Gibbs, Bess	22 Aug 1994	30

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VOCABULARY LIST

Use the following definitions for use with Museum Catalog Record Worksheets:

Classification: The division of objects into specific categories for data organization, i.e., history, ethnology, archeology, biology, geology and paleontology

Object Location: Where object is currently located: a) building, b) each room given a number, c) furniture, d) shelf/drawer

Year: when cataloged, provides a baseline.

Acronym: four (4) letters representing a name. Such as: CARL for Carl Sandburg, FOSU for Fort Sumter (first two letters of each word).

Number*:* A sequential number attached to object. (first item cataloged is #1)

Accession: Documents ownership. How was the item obtained? Accession transactions are either gifts, purchases or field collections. Each transaction has an accession number. An accession number can represent many objects.

Site of Origin: Where made.

Dimensions: Measured in centimeters. (Take largest dimension, i.e., longest area of a shoe and widest width of a shoe.)

Component Part: Used when an object has more than one part (i.e., teapot and lid, pair of shoes) Example would show as 15a, 15b.

Description: Most distinctive and significant features of item. Physical description starting with shape, style, details of shape, and condition/damage. NOTE: Books are described first by title, publisher, and then physical description (See Handout #1-C).

Site of Original Collection: Leave blank

Remaining blocks are self explanatory.

Subjects
Science
Social Studies
Math
Technology

Materials

Light:
- ❑ dark blue or kelly green construction paper
- ❑ sunbaked section of a newspaper (sun-bake until paper begins to be brittle *or* oven bake on *very low* heat until paper reaches brittle state)

Teaching Techniques

Lecture

Writing assignment(s)

Handout(s)

Class discussion

Small group discussion

Field trip

Agents of Deterioration
Climatic Conditions (Relative Humidity, Temperature, and Light)

Background

Deterioration is defined as any physical or chemical change in the condition of an object. According to Ralph Lewis, National Park Service author of *Manuel for Museums*, "None [objects] will last forever, but with proper attention you can enable specimens to endure for centuries to come. It is the obligation of a museum to make sure they receive this care."

Environmental factors including *temperature* and *relative humidity* (relationship between the air's water content and its temperature) can be agents of deterioration. High temperatures cause papers to become brittle. High relative humidity can cause metal objects to rust and papers to mold. High relative humidity causes organic fibers like wood to expand and swell. Low relative humidity causes them to contract or shrink. This process of expanding and shrinking related to humidity fluctuations causes furniture to weaken and deteriorate in the form of cracks and dislodged or loose members.

To protect museum collections from temperature and relative humidity related damage, museums strive to control their indoor climates and maintain a stable year-round temperature of 65 - 70 degrees and a stable year-round relative humidity between 35 and 50 percent with appropriate HVAC systems for heating, ventilating, and air conditioning. National park museum professionals monitor the environment (temperature and relative humidity) to create a record of environmental changes and how these changes affect the museum collections. They also monitor the environment to ensure that mechanical HVAC systems are working correctly. A simple thermometer can be used to measure the temperature, and a hygrometer can be used to measure relative humidity. Most museum professionals prefer *hygrothermographs* or computerized data loggers for monitoring equipment because they create charts showing the daily fluctuations of temperature and relative humidity. In a climate controlled museum environment with properly functioning HVAC equipment, hygrothermograph charts should record straight lines representing no fluctuations. In a museum environment without HVAC systems, hygrothermograph charts will record fluctuations related to outdoor weather conditions and if present, indoor heating systems.

Light comes from the sun and artificial light sources. It can cause irreversible damage to museum objects. Both ultraviolet light (the most damaging segment of the light spectrum) and visible light fade colors and break down fibers in textiles and paper materials such as clothing, photographs, and water color paintings. Light bleaches wood and breaks down wood finishes. Light accelerates chemical reactions in materials and causes papers with high acid contents like newspaper to become brittle and fall apart.

Museum lighting must also be controlled and monitored to protect objects from excessive visible light and most ultraviolet light (UV). Light/UV reducing film applied to museum windows are necessary to protect museum collections from light damage. Window treatments such as curtains, shades, and blinds can also be used. Fluorescent light fixtures emit harmful UV light rays. Museums apply plastic tubes or film to fluorescent fixtures to reduce these harmful emissions. Museums rotate or reproduce light sensitive materials including textiles, photographs, and papers to preserve them and protect them from damage.

On a molecular level, preservation is easiest understood in terms of stable vs. unstable environments. For example, keeping in mind that all objects are made of molecules, the less they move the longer the object will remain in its original state. When there are changes in the environment immediately surrounding an object the molecules move more rapidly. It is the goal of curators to create an environment where change is very limited if existent at all. This environment will allow for the molecules to remain still and thus the deterioration process occurs much slower as there is less wear and tear on its make-up. You can imagine how an unstable environment, with extremes in temperature, moisture, and light, would cause the molecules to become active at the change.

Procedures

Relative Humidity, Temperature

1. Initiate a discussion about humidity and temperature and how these two elements can cause an unstable environment throughout any given day and especially in the various seasons. Explain the importance of creating a stable environment for protecting objects from such changes.
2. To demonstrate unstable environments have each student choose a city to monitor for one month, or for the length of time you deem necessary. Have the students go to the

weather channel website each day and look up and record the relative humidity and the temperature for that city.

3. After the data is collected have the students make two graphs (or one that includes both data points) to show these two aspects of the weather. Students should then plot the data on the graphs according to the information they gathered about their "city."
4. What does the graph represent? Discuss what a stable environment graph would look like.
5. Have students list some ways to create a stable environment. Ask them why a stable environment is so important for preservation. What is happening to the molecules within an object when change and especially extremes in humidity and temperature take place?

Light:

1. Have students place objects (jewelry, leaves, classroom supplies, punched paper, lace doilies, etc.) on a sheet of dark blue or kelly green construction paper. Place paper in sunny windowsill or other sunny location for several days. Observe changes in coloration of paper.
2. Have students pass prepared newspaper from person to person. Observe what happens to the paper during this handling.

Modifications

- If time is limited, select only 2 activities or divide class into 4 groups and assign each activity to a group
- Call a local museum and ask if they use hygrothermographs to measure relative humidity and temperature. If they do, maybe they can arrange a field trip to their site for the students to see how a hygothermograph works and how the curators use this data to help them create a stable environment.
- Have students draw a design that shows a climate controlled setting for objects to be placed in for long term preservation treatment. The diagram must include lables and supporting information to justify their design.
- If time permits, have the students build a prototype climate controlled storage unit and explain how their system will help stablize the environment in which the object will be stored.

Agents of Deterioration
Pollutants and Biological Agents

Background

Air pollution in the form of smoke, car exhaust, and industrial emissions does not directly affect Carl Sandburg Home NHS. However, many museums in more industrial and urban areas have to protect their museum collections from these harmful pollutants. Dirt, dust, pollen, and natural debris such as leaves are also pollutants. These pollutants can attract insects into museum environments and stain and accelerate the deterioration of museum objects. Pollutants come into museums in many ways including through windows, doors and chimneys, and on people's clothing and shoes. When visiting a museum or historic site make sure to wipe your feet on entrance doormats and stay on carpet runners. Museums employ museum housekeeping and attentive building maintenance programs as well as window/door screening, carpet runners, door mats, and air filters to protect museum collections from harmful pollutants.

Museum collections are also vulnerable to damage and deterioration from *biological organisms* including insects, mold, rodents, and people. Insect feeding and nesting activities permanently damage and scar museum objects. Food, plants, pollutants, and high humidity attract insect and rodents into museum interiors. Mold becomes active (fuzzy) in high humidity and temperatures, and it permanently stains objects and poses a health threat to museum staff and visitors. People damage museum objects through improper handling and misuse. Oils and acids in our skin can soil and stain the surface of museum objects such as paper and metal. Objects can be broken by people mishandling or leaning on them. Museum professionals are trained in proper ways of handling and transporting objects, and they wear white cotton gloves for handling most objects.

Procedures

1. Have students scrape or brush bottoms of footwear onto a sheet of plain white paper. Examine scrapings with magnifying glass or microscope to determine pollutants (dirt, bugs, plant fibers, etc.) found.

Subjects
Science
Social Studies
Environmental Studies

Materials
- ❑ insect trap (fold 3x5" card [or tag-board] into thirds; place double sided tape in center section; pull two ends up above center section to form triangular figure; tape or staple at top)
- ❑ magnifying glasses or microscope(s)
- ❑ plain white paper
- ❑ toothbrushes, tongue depressors, or similar object for shoe scraping

Teaching Techniques

- Lecture
- Writing assignment(s)
- Class discussion
- Small group discussion
- Additional research

2. Have students prepare an insect trap. Place traps in different locations in the school. (Best location: near doors and windows) Examine results. Attempt to identify trappings.
3. Discuss how insects, people, and pollutants can contaminate museum environment and harm museum objects. (Be sure to include idea that plant matter, dirt, pollen, etc. can be food for insects and rodents as well as a pollutant and agent for damage.)

Modifications

- Students may use litmus paper to show acids on hands.
- Bring in or create objects that have been broken and glued back together to show difference in integrity of object.

MUSEUM ETIQUETTE

Subjects
Language Arts
Drama
Visual Arts

Teaching Techniques

Class discussion

Small group discussion

Field trip

Background
(Teacher may wish to add personal rules to this list; museum etiquette rules should include:)

1. Wipe feet on provided doormats prior to entering
2. No gum, candy, food, or beverages
3. Stay on runners or within designated areas
4. Stay behind any and all barriers
5. Don't touch anything
6. Don't lean on anything
7. Obey rules of site regarding photography
8. Be quiet and respectful towards tour guide and other visitors
9. Stay with your group
10. Wait until tour guide is finished talking before asking questions. Wait until end of tour before asking questions that require extensive answers.
11. Remember, this is a ***museum***, not someone's ***home***.

Most guidelines are created with preservation and safety in mind. For example, rule # 5 stems from the fact our hands are very oily and acidic and touching a museum object will transfer this oil to the object, thereby introducing an agent of deterioration.

Procedures

1. As a whole class, have students generate a list of museum rules and state the reasons these guidelines are needed. (*Note*: Check teacher list to insure inclusion of all suggested guidelines.)
2. Divide class into 4 groups. Groups are to brainstorm, develop, and present impromptu skits to show one of two assigned situations:
   - How to behave correctly in a museum setting
   - Inappropriate behavior in a museum setting

Modifications

- Gifted students could design set, props, etc. for skit presentation.
- Take field trip to local museum such as an art gallery, historical site, zoo, National Park, aquarium, etc. While on bus or before entering location, review etiquette

procedures. Students should be directed to be cognizant of:

- Climate control devices or lack thereof
- Runners, barriers and other protective measures
- Presence of museum staff. Did *they* use proper procedures and remind the group of the same?
- Areas where deterioration may occur if protective measures are not undertaken.

Preserving the Story

Background

Museums not only work to preserve an object from deterioration, but they also work to preserve the story behind the object. Where did this come from? How was it used? Who made it? What was it used for? When was it used? Who used it? Why is it important? What does it tell us about our history? Does it answer any questions about society? All these questions help to formulate the essence of an object's existence. The object may tell us something about the people that we didn't know before or it may affirm what we thought to be the truth. These stories help us to understand who we are as humans on this earth.

Procedures

1. Discuss definitions of primary and secondary documentation. How are these similar? How are they different? Why is this important? Discuss types of sources available and need for preservation, accuracy, and appropriateness of material selection in an exhibit.
2. If possible, visit a local museum and evaluate the appropriateness, accuracy, sources exhibited. Note types of materials utilized.
3. Take in-school field trip to discover exhibits that show secondary and/or primary documentation. These may include bulletin boards, trophy cases, gym record boards, etc. Discuss which effectively utilize primary and secondary documentation. Is the display well organized? How could it be better? (Organized chronologically, by event, etc). Would titles or labels be helpful?
4. In one week's time, students are to develop an exhibit pertaining to a family member or adult friend. The exhibit must incorporate primary and secondary sources, but may be displayed in any form. (Flat display, 3-D, poster, book, etc.) Students should designate which items in their exhibits are primary and which are secondary sources.

Modifications

- Incorporate each type of source into separate projects, for example an oral history project, a biography or a book of memoirs, an exhibit of the student's choosing.
- Highlight previous lessons by asking how students may protect the objects used in their exhibits from agents of deterioration. What did they observe concerning this issue when they went to a museum?

Subjects
Language Arts
Social Studies
Visual Art
Technology

Materials
- ❑ Anything necessary for each group's exhibit

Handouts
- ❑ Vocabulary list

Teaching Techniques

Lecture

Writing assignment(s)

Handout(s)

Class discussion

Small group discussion

Field trip

VOCABULARY LIST

documentation: Utilization of information, supporting materials, or data to authenticate, validate, and lend credibility to historic events, personalities and/or sites.

sources of documentation:

primary documentation: First-hand information directly from the time or person. Can include: oral history (spoken by individual himself), personal objects, personal writings and autobiographies, wills, family history recorded in Bibles, paintings, photographs, etc.

secondary documentation: Second-hand account of history including biographies, remembrances (could include oral history: "I remember my mom used to…"), replicas, objects from the time period that had not actually belonged to the individual but which represent items the individual might have used.

exhibit: Public display of objects usually organized according to a theme.

Surf Search

Background

The information explosion of the last decade doesn't show any signs of slowing down. Information is easier to access than ever before and there are a lot of great resources out there. There is also a lot of garbage! It will be more and more important that students be able to navigate around the Internet to find the information they need.

Museum web sites can offer the researcher access into archives that were once only available at the museum. It can provide teachers with on-line lesson plans, college archeology students with information on the latest discoveries in their field, and museum professionals with job opportunities, professional associations, etc.

Procedures

1. Divide class into groups of 3 or 4. Assign or let students choose a web-site from the list provided (be sure a variety of sites are used). Have students answer questions about the site like: Whose homepage is this? Who are they? What do they do? What is the goal of this site? Is the site achieving this goal? How? Who might find it beneficial? Is the site easy to navigate? Why or why not? How would you improve this site?
2. Students will prepare a group presentation describing their findings. Encourage students to incorporate knowledge obtained from previous lessons.

Modifications

- Rather than distributing the addresses, students may use a search engine to find what resources are available about museums on the Internet.
- Have students develop their own homepage!

Subjects
Technology
Social Studies
Language Arts

Materials
❑ Internet access

Handouts
❑ Internet address page

Teaching Techniques

Handout(s)

Class discussion

Internet search

INTERNET ADDRESS PAGE FOR MUSEUM RESOURCES

Please note that the National Park Service does not control and cannot guarantee the relevance, timeliness, or accuracy of the materials provided by other agencies or organizations. The Federal Standards of Ethical Conduct prohibit the National Park Service from endorsing these outside agencies and organizations.

Professional Organizations
American Association of Museums <www.aam-us.org>
American Association of State and Local History <www.aaslh.org>
The Association of Science and Technology Centers <www.astc.org>
International Council of Museums <www.icom.org/vlmp>

Major Museum Funding Organizations with Web Sites
National Endowment for the Arts <www.arts.endow.gov/NEAText/Homepage/Homepage.html>
National Science Foundation <www.stis.nsf.gov>

Conservation Web Sites
National Center for Preservation Technology and Training <www.ncptt.nps.gov>
National Park Service <www.nps.gov>

Miscellaneous Web Sites
Internet Resources for Heritage Conservation, Historic Preservation and Archeology <www.ncptt.nps.gov/prog-pir_fs.stm>
Smithsonian Institution Center for Museum Studies <www.si.edu/organiza/offices/musstud.start.htm>
The Library of Congress <lcweb.loc.gov>
The National Archives and Records Administration <www.nara.gov>
Society for the Preservation of Natural History Collections <www.uni.edu/museum/spnhc>