Look! Look into my Cabinet of Natural Curiosities!

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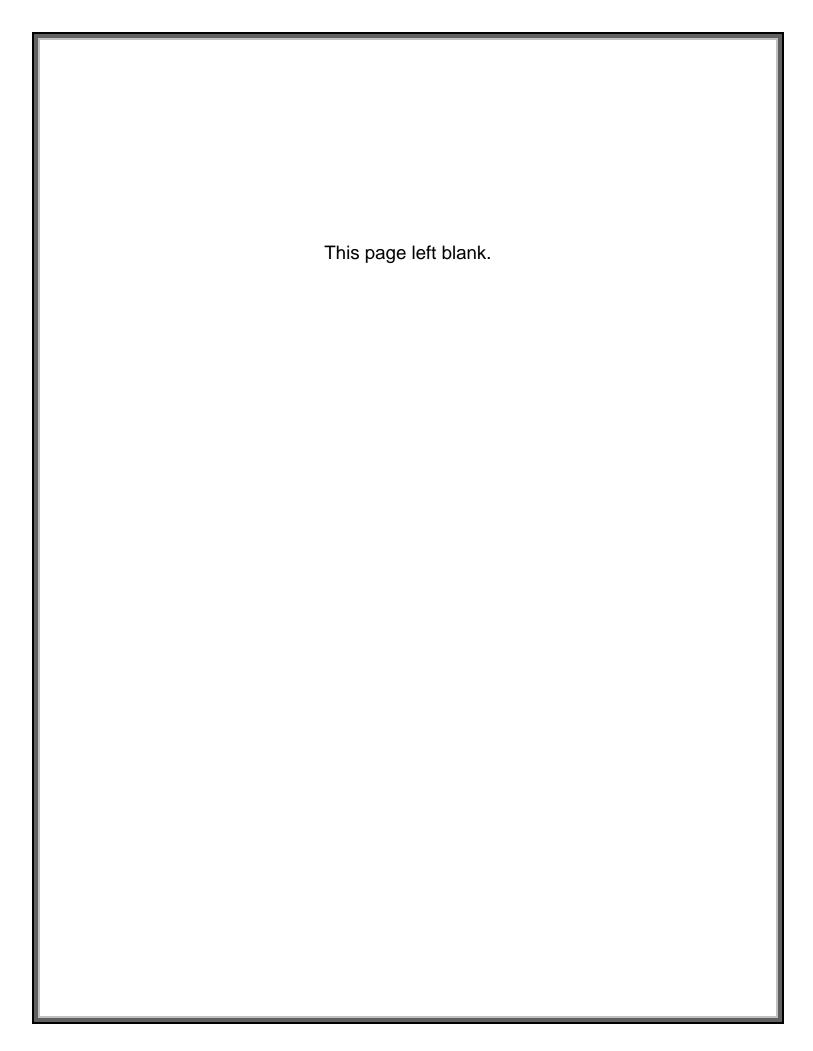
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efore the Renaissance was born curiosity was scorned as part of human pride.
But with the new age, curiosity raged, and the cabinets opened wide.

Upon unlocking the cabinet door, all was visible, ceiling to floor,
Every inch a wonder at a single gaze, a collection of oddities arranged to amaze ...¹

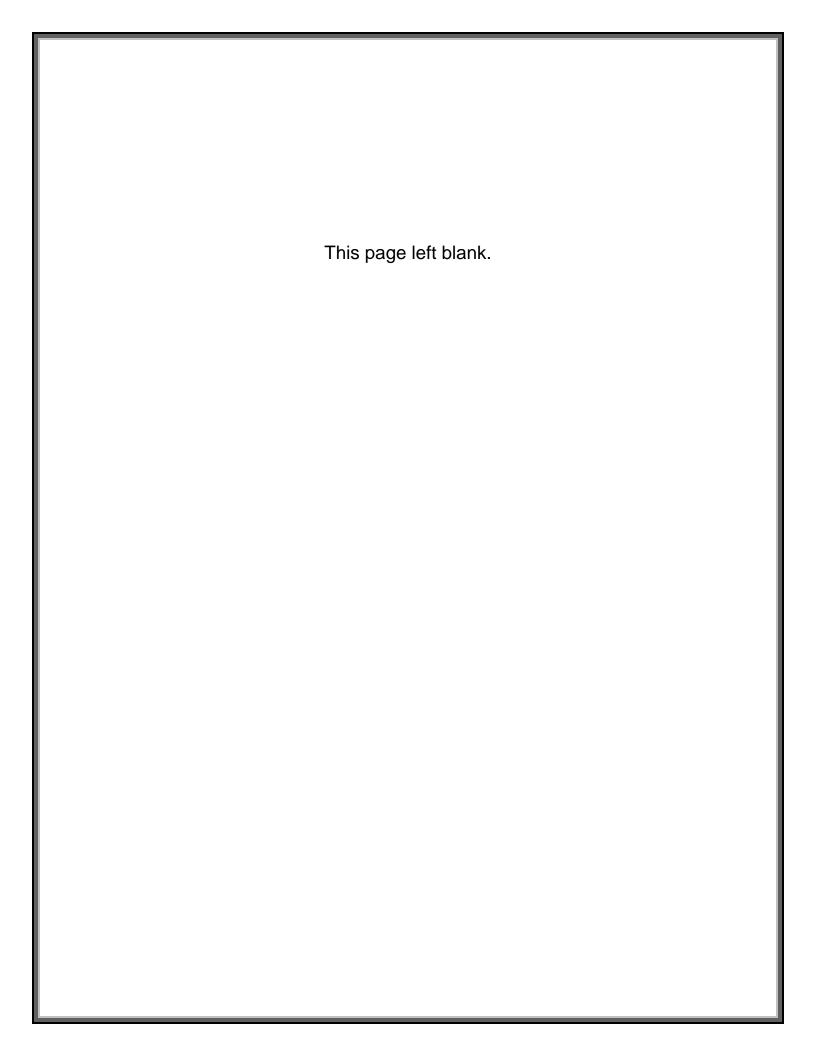
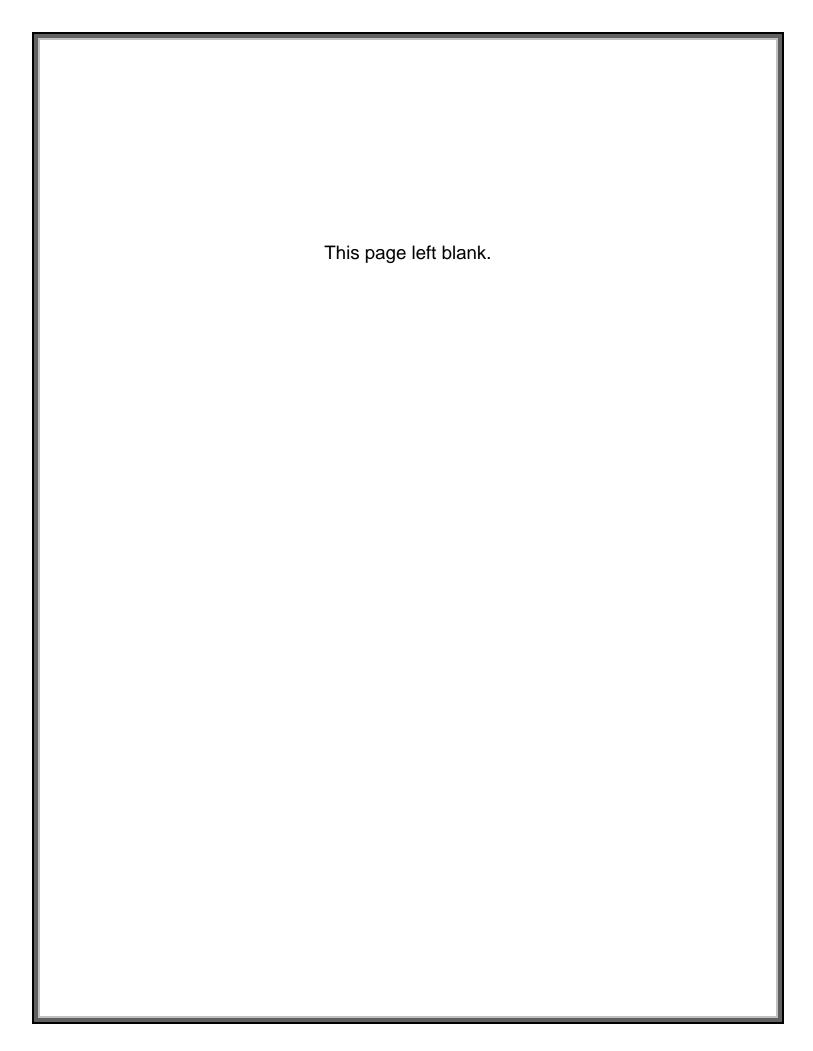


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Introduction

"Look! Look into my Cabinet of Natural Curiosities!" opens a window to the wonders and marvels that surround us by providing students with the opportunity to learn and understand the diversity and beauty of the natural world. "Teams of students select a biological theme, pinpoint a global region to study, then, using maps, journals, historical research and scientific methods, plan an expedition and gather real and/or recreated artifacts to display." Students will then present the cabinet of curiosities to their classmates and engage them to imagine themselves as part of the display or the scene.

This project is an interdisciplinary adventure around the world. The first step is to introduce students to the realm of the biological sciences and how we can extend our understanding of the diversity of life on earth to incorporate other content areas such as language arts, mathematics, social studies, and art. Once each group has selected a theme to research, the students begin the process of exploration to visit that part of the world they are interested in.

Students have the opportunity to use Language Arts skills to write and document their activities and also present orally to their classmates. They are able to use Social Studies skills to learn about the geography of the world and how latitude and longitude is useful in determining locations. Using mathematics skills, they can determine distance traveled and take measurements of samples collected, as well as study the limitless patterns in nature as noted by Fibonacci. Students research history to learn about different time periods as well as the technology of the time and how traveling around the world was and is made possible. Using their knowledge of science and the use of the scientific method, the team members can carry out research, classify their specimens, and maintain the integrity of the data collected. Finally, they will apply their creative talents construct display case which will offer their а classmates/audience a view into this unique part of the natural world.

This project presents students with opportunities to explore new ideas. The many cabinets of curiosities that can be created provide a provocative and novel setting to learn.

History of the Cabinets of Curiosities³

Cabinets of curiosities (also known as Wunderkammer, Cabinets of Wonder, or wonder-rooms) were encyclopedic collections of objects whose categorical boundaries were, in Renaissance Europe, yet to be defined. Besides the most famous, best documented cabinets of rulers and aristocrats, members of the merchant class and early practitioners of science formed collections that were precursors to museums.

The term cabinet originally described a room rather than a piece of furniture. The first of the cabinets of curiosities were assembled in the mid-sixteenth century. The earliest pictorial record of a natural history cabinet is the engraving in Ferrante Imperato's *Dell'Historia Naturale* (Naples 1599).



It serves to authenticate its author's credibility as a source of natural history information, in which many of the volumes in the bookcases most probably represent his plant collection. specimens Every surface of the vaulted ceiling is occupied with preserved fishes, stuffed mammals and curious shells, even a stuffed crocodile is suspended in the center.

One of the most famously described 17th century cabinets was that of Olaus Wormius (1588-1654). His cabinet was filled with preserved

animals, horns, tusks, skeletons, minerals, as well as other types of equally fascinating man-made objects: a mix of fact and fiction, including mythical creatures. The specimens displayed were often collected during exploring expeditions from exotic locations and trading voyages.



This project draws its inspiration from the curiosity cabinets of Europe's Age of Enlightenment (late 17th century). "Those were marvelous rooms of exotically and aesthetically arranged specimens that blurred the boundaries between art and science."

Purpose of the Project

- The purpose of this project is to promote academic excellence among all students. They show team effort and become more productive in their efforts to create the most outstanding and interesting, one-of-akind, "cabinet of natural curiosities."
- ❖ Test scores improve because students are learning from their peers in an environment that is more engaging than the traditional lecture and textbook format. In this setting, students are not passive learners but active participants empowering themselves to construct knowledge instead of accepting it. Students sharpen their information-gathering, organizational, and problem-solving skills by carefully documenting the artifacts selected for their cabinets.
- School attendance also shows improvement because all students want to participate in the project and contribute to its success. Students know the time frame for completion of the project and the due dates for each component, so they make an effort to be in class to play a part in the research, as well as the construction of the display or diorama.
- Knowledge, values, and attitude towards science also show significant improvement. Students have the opportunity to understand science concepts and to relate them to other content areas as well as everyday experiences. Behavior also shows a dramatic improvement because the classroom setting is informal, and students enjoy collaborative learning in their peer groups.
- While useful content in all areas is being explored, constructing these displays results in the advancement of knowledge. This project is a fun experience for the students without overemphasizing the process of learning, even though they are still learning new concepts and processing new information.
- Finally, communication skills improve because students are able to create narratives to convey information. The cabinets of natural curiosities offer great opportunities for the presenting team and the audience to engage in class discussion.

Goals and Objectives

Goals

The main goal of this project is to create a multidisciplinary unit of study which will immerse students in all the aspects of creating the "cabinets of natural curiosities" by incorporating real and/or recreated artifacts in their presentations. Through these displays, students will enhance their understanding and interpretation of the biological themes.

Objectives

The objectives of this project are:

- To stimulate and strengthen problem-solving and critical-thinking skills,
- To encourage collaboration and teamwork,
- To enhance student motivation.
- To provide hands-on opportunities to students,
- To inspire inquisitiveness and logical inquiry,
- To encourage making connections,
- To instill a recognition of the importance of art and science,
- To integrate science with other subject areas,
- To require students to collect, analyze, and report data and to then draw conclusions,
- To apply scientific concepts to real life,
- To improve the reading and writing abilities of students,
- To become familiar with defining a story line and story elements,
- To use various technologies to complete activities related to their projects,
- To create a display to inform others of their research.

Sunshine State Standards⁵

Science Standards – Grade 9 – 12

The Nature of Matter

Standard 1: The student understands that all matter has observable, measurable properties. (SC.A.1.4)

Processes of Life

Standard 1: The student describes patterns of structure and function in living things. **(SC.F.1.4)**

Standard 2: The student understands the process and importance of genetic diversity. **(SC.F.2.4)**

How Living Things Interact with Their Environment

Standard 1: The student understands the competitive, interdependent, cyclic nature of living things in the environment. (SC.G.1.4)

The Nature of Science

Standard 1: The student uses the scientific processes and habits of mind to solve problems. **(SC.H.1.4)**

Language Arts Standards – Grade 9 – 12

Reading

Standard 1: The student uses the reading process effectively.

(LA.A.1.4)

Standard 2: The student constructs meaning from a wide range of texts.

(LA.A.2.4)

Writing

Standard 1: The student uses writing processes effectively. (LA.B.1.4)

Standard 2: The student writes to communicate ideas and information effectively. (LA.B.2.4)

Listening, Viewing, and Speaking

Standard 1: The student uses listening strategies effectively.

(LA.C.1.4)

Standard 3: The student uses speaking strategies effectively.

(LA.C.3.4)

Mathematics Standards - Grade 9 - 12

Number Sense, Concepts, and Operations

Standard 1:The student understands the different ways numbers are represented and used in the real world. (MA.A.1.4)

Measurement

Standard 1: The student measures quantities in the real world and uses the measures to solve problems. (MA.B.1.4)

Standard 3: The student estimates measurements in real-world problem situations. (MA.B.3.4)

Standard 4: The student selects and uses appropriate units and instruments for measurement to achieve the degree of precision and accuracy required in real-world situations. (MA.B.4.4)

Geometry and Spatial Sense

Standard 3: The student uses coordinate geometry to locate objects in both two and three dimensions and to describe objects algebraically. (MA.C.3.4)

Data Analysis and Probability

Standard 1: The student understands and uses the tools of data analysis for managing information. (MA.E.1.4)

Social Studies Standards - Grade 9 - 12

Time, Continuity, and Change [History]

Standard 1: The student understands historical chronology and the historical perspective. **(SS.A.1.4)**

People, Places, and Environments [Geography]

Standard 1: The student understands the world in spatial terms. **(SS.B.1.4)**

Visual Arts Standards - Grade 9 - 12

Skills and Techniques

Standard 1: The student understands and applies media, techniques, and processes. **(VA.A.1.4)**

Creation and Communication

Standard 1: The student creates and communicates a range of subject matter, symbols, and ideas using knowledge of structures and functions of visual arts. **(VA.B.1.4)**

Course Outline/Overview

Teachers may adapt the following lesson outline in their classes to accommodate their own particular set of guidelines or circumstances. The goals and objectives of the project refer to Sunshine State Standards across the curriculum, and the level of depth depends on the teacher adapting the project and the students' capabilities. The use of technology is incorporated throughout the lesson, and Internet access is a requisite for successful completion of the project.

It is also recommended that students participate in groups of four or five; however, depending on the size of the class and the age of the students, groups can be smaller. Individual work is not recommended because it defeats the purpose of collaborative learning, and researching will become a monumental task for one person. Student achievement level is not a major factor in determining the organization of the groups.

The time frame for completion of the project is not a critical issue; however, enough time should be allocated in case special artifacts or other materials need to be ordered.

I have been using this project since 1995, and throughout this time, it has gone through variations of the basic theme. I have used it to study plants, animals, scientists, topics in science, etc. The uses of the project are almost infinite. It depends mainly on students' interests and the available resources and/or access to materials.

The overall value of this project is mainly the strong interest it generates among the students participating as well as the audience. Students discover through research, and they love to explore. The role playing component of the project allows students to relate to their themes, and the characters they design, whether imaginary or real, make their presentations more interesting for everyone involved.

The best feature of the project is the element of surprise. Each team works independently and "behind closed doors," so to speak. The day of the presentations, all students are curious as to each others' display cases because the doors are closed. It is not until the team members begin to narrate their adventures that the audience has a glimpse of what is to come.

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This project greatly contributes to student achievement because students are actively involved in the learning process. They are learning best because they are pursuing the assignment with enthusiasm. Students have very vivid imaginations and enjoy the task of becoming explorers over time and visit distance lands. Additionally, the project can be adapted within any content area, and it may be interdisciplinary or not. However, a project that involves multiple content areas promotes critical thinking, learning, and student involvement.

Projected Timeline

1. Day 1 - Background Information – "Look! Look into my Cabinet of Natural Curiosities" begins with a one-day lesson on the history and origin of these fascinating rooms filled with specimens and oddities from around the world. The brief PowerPoint lesson is followed by a narrated slide show of images of the early cabinets of Renaissance Europe and images of the Smithsonian museums and the Nature Lab at the Rhode Island School of Design. The latter one is particularly interesting because it was started as a cabinet of curiosities by Edna W. Lawrence (1885-1987), American painter, scholar, and teacher. She was responsible for greatly enlarging the collection of natural history specimens, including mounted insects, minerals, shells, living plants and various animals. This extensive collection was used by Lawrence to help her students explore the beauties of nature. 6,7,8





2. Day 2 - Before meeting with students, prepare a list of possible themes. Allow students to select their team members and have them write their names, cell phone numbers, and e-mail addresses on an index card. Later on, assign the team a name according to the theme selected. Make a copy of the card to distribute to all the members of the team. Also give each student a manila folder to safely store their materials. Present the project guidelines to the students and give them ideas so that they can select a theme or allow them to select their own, as long as it is within access. Allow students to meet in the classroom the rest of the period to determine the general purpose of the cabinet, define a story line, and decide on the role/character each student will play in their expedition and the process of creating the cabinet. Each team should have a captain and three or four crew members. Reserve the Media Center for the next class meeting.

Home learning assignment – Students will continue to research other themes if they are still undecided or start researching facts.

3. Day 3 – Students get together with their team members. Distribute student worksheets, materials/resource list, and grading criteria. Discuss timeline and due dates. Take the class to the Media Center to begin their research, gather facts, and plan the construction of the display (cabinet).

Home learning assignment – Students will continue to research facts and put together a list of artifacts. These are very important because they should be able to convey information about the theme to the audience.

4. Day 4 – Collect from the students the materials/resource list to determine what they need to complete the project. Check what supplies are available and what needs to be ordered. Students must bring to class all the facts they have collected and begin planning the layout of the display.

Home learning assignment – Students will continue to research facts, begin planning their writing assignments (diaries/letters), and gather artifacts. Note! If students cannot come up with a list of artifacts, this

is an indication that they theme they have selected may not work for this project. Remind students that the selection of artifacts is very important because they must attract an audience.

5. Day 5 – Students should get together with their team members and continue to write descriptive and interpretative materials for their presentation. Distribute a list of art supplies and have students put a check mark next to the items they need. Consider requesting the collaboration of the Art Department for some of these supplies; others will have to be purchased.

Note! Have empty Xerox boxes or wooden wine cases ready for distribution.

6. Day 6 – Students will continue to work in teams and begin writing promotional or descriptive brochures to be distributed to the class during the oral presentation. Review the list of supplies to determine what needs to be purchased.

Home learning assignment – Visit office or art supplies stores to buy materials. These must be brought to class the next day.

7. Day 7 – Students will continue to work in teams and begin decorating their cabinets. Distribute the display cases and art supplies.

Home learning assignment – Students should be putting final touches on their writing assignment to bring to class the next day.

- 8. Day 8 Students will continue to work in teams and begin putting the artifacts in the cabinet. All items must be properly labeled with title and brief description.
- 9. Day 9 All cabinets must be completed and presentation and distribution pieces completed and photocopied.
- 10. Day 10 Class presentation and final assessment.

The timeline for completion of this project varies depending on the complexity of the assignment and the number of times the class meets weekly. It may take between two to four weeks.

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Cabinet of Natural Curiosities

Lesson Plan

Brief Overview

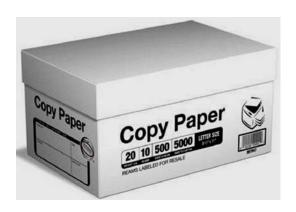
This multidisciplinary lesson is for 9th to 12th graders, and it integrates science, language arts, mathematics, social studies, and visual arts. Students collect, catalog, and classify artifacts; write original stories of exploring expeditions and trading voyages; and present their research through a "cabinet of natural curiosities."

Lesson Plan Sample

Recently, a team of students wanted to visit Peru to learn about the butterflies that inhabit this region because they are considered the most beautiful in the world. As a team, their task was to research about the forests of Peru and to plan an expedition to the region. This plan included maps of the world and the region, as well as the time period for this expedition and the mode of transportation. The explorers, one captain and three crew members, had different roles during the expedition. The captain of the expedition determined how and where the team would travel, a cocaptain determined the possible dangers the expedition might face, a recorder kept a compilation of a journal/diary of their adventures, letters and government documents, and a collector of samples documented description and locations of specimens and kept the scientific integrity of the data collected. The project culminated in a display case which included butterflies, caterpillars, chrysalides, host/nectar plants, and photographs of the forest. An oral presentation was given by the explorer team, and they distributed brochures of their expedition to their audience. The exploration to Peru was mostly unique because one of the team members had emigrated from Quito, the capital of Peru, about four years ago. young lady felt very special that her native country had been selected. She took it upon herself to make her team members' expedition unique by sharing with them her own personal experiences and incorporating these into their presentation.

Materials

Materials for this project can be very simple, every day objects, or more elaborate artifacts purchased from biological suppliers or specialty stores. The list of materials can be prepared ahead of time if the teacher assigns the themes based on materials on hand, or after the students have selected their themes. For the most part, the display case is an important element of the project, and it can be expensive if purchased from a supplier. I use empty boxes of Xerox paper with the lid, which I start saving early in the school year. These will eventually be used by the students to showcase their research and artifact display. In the past, I have also used empty wooden wine cases, which make beautiful displays because the tops are hinged, and there is a clasp for closure. The name of the wine can be covered with a decorative paper or with spray paint. These cases can be donated by the local groceries stores. Other materials can be purchased locally, such as shells, flowers, butterflies, etc. Others can be purchased online or through catalogs depending on the theme and timeline of the project.





Corrugated paper box⁹



Vintage soda crates¹¹

Wooden wine case¹⁰



Wall curio cabinet¹²

The use of the school Media Center is an important component of the research involved in this project. Students will need a computer with Internet access and color printing capabilities, if they are going to use images in their display cases instead of preserved specimens, or a camera to take photographs of the objects or subject to be displayed. However, the public library is also invaluable because it contains many resources including maps, historical documents, and encyclopedias. Old magazines that can be cut up are also a good source of pictures. Other materials include computer paper, colored paper, construction paper, coloring pencils, crayons, watercolors, pastels, scissors, glue, rulers, poster board, etc. The adapter teacher can modify the materials list to fit the needs of the students.

Teachers and students can find other resources just about everywhere. It all depends on the theme selected. Parents and guest speakers and local institutions can also contribute to the projects through donations of artifacts or other materials.

Assistants are not necessary, but the collaboration of other teachers within other content areas is helpful. At the elementary school level, assistants including parents, paraprofessionals, and volunteers may be needed.

Cabinet of Natural Curiosities

Names	Date
Theme	
Materials List	
Display case	
Poster board	
Parchment paper	
Colored multipurpose paper	
Copier paper	
Construction paper	
Color(s)	
Contact paper	
Wall paper	
Spray paint	
Color(s)	
Fabric	
Ribbons and string	
Needles and threads	
Scissors	
Balsa wood	
Glue gun and glue sticks	
X-Acto Knife	
Ruler	
Hammer and nails	
Screw driver and small screws	
Acrylic paints	
Watercolors and paint brushes	
Coloring pencils	
Pastels	
Modeling clay	
Other	

Cabinet of Natural Curiosities

Project Guidelines and Grading Criteria

This multidisciplinary project emphasizes creativity and imagination. It also emphasizes the process of writing and the art of thinking critically as you create these cabinets that tell very unique stories. Through your collections of artifacts, natural materials, and diaries, you will invite your audience to look, explore, and think.

1. Get into teams of four or five. Select a team leader. Develop a team contract. (Who is going to be responsible for doing what?). Exchange contact information by writing cell phone numbers and e-mail addresses on index card.

Value: Contract - Letter grade (1) (A-F)

2. Select a theme and a location on the globe where these artifacts will be found. (Shells, butterflies, coins, stamps, fossils, flowers, leaves, insects, vintage postcards, dolls, daguerreotypes, etc.) Choose your own theme as long as it is easy to find artifacts. Also select a time in history to travel to this location and mode of transportation. Remember that you will have to keep a diary and maps of the expedition. Once you have selected your theme and location, determine the roles each of you will play during your travels. Define a story line and devise a plan for the display layout and construction.

Value: Theme Selection/Roles – Letter grade (1) (A-F) Value: Story Line/Display Layout – Letter grade (1) (A-F)

3. Begin research in Media Center. Review materials/resource list and check what you will need for your project. Put together list of artifacts and check availability. Write a list of supplies that need to be ordered or purchased locally.

Value: Materials List/Supplies – Letter grade (1) (A-F)

4. Continue research in Media Center and for homework. Begin writing descriptive and interpretative materials for your presentation. Determine which elements would be more attractive to your audience and design promotional brochures to be distributed to your classmates during your oral presentation.

Value: Promotional Brochure Design – Letter (1) (A-F)

- 5. Pick up your display case and art supplies. Begin decorating and laying out artifacts in your cabinet. Identify the artifacts and write labels for every single object. The labels must have title and brief description. Remember to point out particular facts of interest about your artifacts. Keep the label short.
- 6. Finish setting up the cabinet. Remember to make enough copies of the presentation and promotional brochures to distribute to all classmates.
- 7. Presentation, assessment, and evaluation. Grade will be based on originality, creativity, use of materials, layout/design, cabinet construction, ability to capture audience attention, effective written communication, and knowledge transfer.

Value: Cabinet – Letter grade (5) (A-F)

Value: Travel Diary/Letters – Letter grade (4) (A-F)

Value: Oral Presentation – Letter grade (1 - average of the team) (A-F)

Value: Promotional Materials – Letter grade (2) (A-F)

Value: Student Presentation Evaluation – Letter grade (1) (A-F)





Corrugated paper box



Vintage soda crates

Wooden wine case



Wall curio cabinet

Resource List

The Smithsonian Institution. http://www.si.edu/

Smithsonian Center for Education and Museum Studies.

http://smithsonianeducation.org/

Teaching With Collections. Smithsonian Education.

http://www.smithsonianeducation.org/educators/lesson_plans/collections/index.html

Museums in the USA. http://www.museumca.org/usa/

National Park Service. http://www.nps.gov/history/museum/

The American Museum of Photography.

http://www.photographymuseum.com/primer.html

The Home Depot. http://www.homedepot.com/

Lowe's Home Improvement. http://www.lowes.com/l

Publix Super Markets, Inc.

http://www.publix.com/about/CommunityInvolvement.do

Winn Dixie Stores, Inc. http://www.winn-dixie.com/

Office Depot. http://www.officedepot.com

OfficeMax. http://www.officemax.com

Staples, Inc. http://www.staples.com

Pearl Fine Art Supplies. http://www.pearlpaint.com/

Michaels, The Arts and Crafts Stores.

http://www.michaels.com/art/online/home

Sanibel Seashell Industries, Sanibel, Florida.

http://www.seashells.com/home.htm

Plastic Display Stands. http://www.seashells.com/stands.htm

Shell World, Key Largo, Florida. http://www.shellworldflkeys.com/

The Dinosaur Store, Cocoa Beach, Florida. http://www.dinosaurstore.com/

Ianni Butterfly Enterprises. http://iannibutterfly.net/

Butterfly World, Coconut Creek, Florida. http://www.butterflyworld.com/

Miami-Dade Public Library System. http://www.mdpls.org/

Carolina Biological Supply Company. http://www.carolina.com/

Ward's Natural Science. http://wardsci.com/

Nature Lab at Rhode Island School of Design, Providence, RI.

http://www.risd.edu/VR/naturelab/

Albertus Seba's Cabinet of Natural Curiosities.

http://www.amazon.com/Albertus-Sebas-Cabinet-Natural-Curiosities/dp/3822816000

Angela Lorenz's "The Theater of Nature or Curiosity Filled the Cabinet." http://www.ilab.org/db/book1838_15404.html "History of Curios."

http://www.homefurnish.com/kitchendining/kitchencabinetsstorage/historyofcurios.aspx

"Create a Classroom Museum Exhibit."

http://desertmuseum.org/center/edu/docs/6-8 TIP exhibit.pdf

Miscellaneous Resources

Antique Stores and Shows
Art Shows (Art Deco Weekend)
Flea Market
Garage Sales
Grocery Stores
Thrift Stores (The Salvation Army or Goodwill Industries)
Community Resources

Local hobbyists, artisans, writers, and collectors (coin, stamps, and dolls)

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