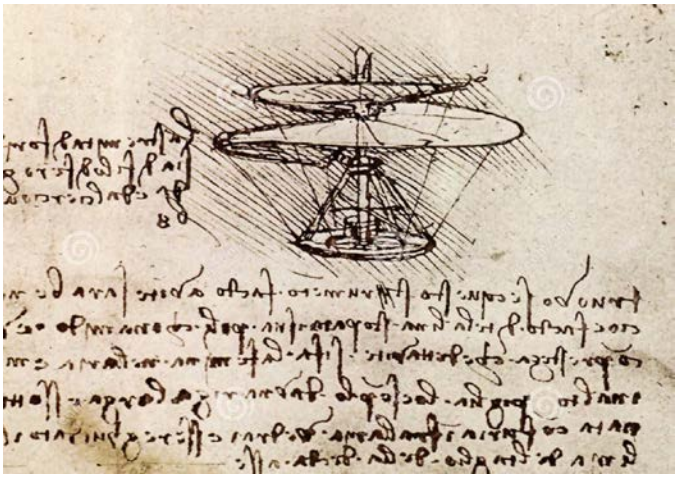

Jaime Lynn Shafer
Art Lesson Plan

Grade Level: 4th
Domain: Inventors

Learning Objectives

1. Reinforce concepts and vocabulary from Core Knowledge:
   Avid, inspire, potential, revolutionary

2. Introduce art concepts:
   - Demonstrate an understanding of how sketches can aid in developing valuable ideas and a better understanding of how things work
   - Demonstrate an understanding of art terminology: observation, sketch, "Renaissance Man", apprentice, guild
   - Understand the historical development and context of the ultimate "Renaissance Man"—Leonardo da Vinci, and his contributions to science, architecture, art, engineering, inventions
   - Observe a machine closely from several angles while it operates
   - Identify the elements of machines combined in different gadgets
   - Show how the moving parts in machines relate to and affect each other
   - Create a clear diagram of how a machine works
   - Explore connections between the various disciplines of science and the visual arts
   - Explore the factual information in an alternative way to suit different learning styles

National Core Art Standards

Creating: Students will create a piece of art.
Performing/Presenting/Producing: Students will realize their artistic ideas through learned techniques.
Responding: Students will evaluate how the arts convey meaning.
Connecting: Students will relate how their artistic work connects with external content learned in core knowledge.

Time Frame

4—30 minute class sessions

Materials:

- paper
- pencils with erasers
- printed copies of the Inventor's Toolbox pages for reference.
- a selection of small machines with visible working parts (the more you have, the better): egg beater, cork screw, car jack, can opener, garlic press, tongs, monkey wrench, hand drill, Vise-Grips, the

mechanism from a music box, wind up toy, pencil sharpener, staplers

- images of Leonardo's sketches and paintings and other artists
- Drawn example to share with student

Activities

Session 1

Introduction

Who was Leonardo da Vinci?

Ask students what they have read or heard about him: Where did he live? When did he live? Why is he famous? Share with students that Leonardo was a "Renaissance Man"—he was a person with many talents and areas of knowledge. Leonardo was a scientist, architect, artist, engineer and inventor.

He lived during a time called the Renaissance (1400s). Renaissance means rebirth or re-awaking. This was a time when people began to examine the world in more depth. They stopped being afraid of the world and began exploring their surroundings, how things worked, and the natural world. They were no longer fearful of experiencing new things. Prior to this time, people really didn't explore the world around them. They followed the church's teachings, many didn't read, write or travel. Most were uneducated, except for what the church told them. During the Renaissance, this changed.

Leonardo grew up in Italy in the countryside with little education, but a curious mind. He was an **avid** learner and asked many questions. He lived with his uncle, who would answer all of his questions about the world and try to help him learn and experience as much as possible. Eventually, Leonardo went to live with his father in Florence, Italy. His father saw that he had great **potential** to be a successful artist and apprenticed him to a famous sculptor. Leonardo lived with the sculpture and other apprentices in a guild. He was only 14, but he was considered old! Most young boys were apprenticed at age 11 or 12.

As an apprentice, Leonardo discovered that artists had to be good at other subjects. For example, once his master was commissioned to build a sculpture for the top of a building. The sculpture had to be 20 feet wide, by 20 feet high, by 20 feet deep (think of the length of this room!). Leonardo saw that he had to be knowledgeable in other subjects such as science, math and architecture. He understood that in order to make something that he drew on a small piece of paper and make it as large as a room he had to learn all of these things. He was **inspired** to ask more questions and keep learning as much as he could.

Discussion/Examination of Sketches

Today we are going to examine Leonardo's sketches. Why do artists, engineers, architects make sketches? (To help plan out what they want to make or build, to better understand how things work, to help them observe and see things clearly, to work out ideas, your first idea is rarely your best, sketching is quick and dirty (it doesn't have to be perfect!), you will actually save time, and best of all—sketching is fun!

Do any of you have a sketchbook? What kinds of things do you draw or write down in your sketchbook?

Let's look at some sketches and notice what kinds of notes are added to the sketches and how people use them to explore ideas.

Teacher will pass out copies of sketches from Leonardo and other artists. Students will discuss in small groups and then share their answers.

Demonstration/Activity
Students will create a sketch. Ask students to pull out some objects from their desks and set them in front of them. Let's look at the objects and try to break them down into basic shapes. Sketches can be dirty and quick—don't worry about erasing lines or making it perfect! Teacher will demonstrate how she sketches.

Guided Practice:
Students will pull out 2-3 objects from their desks and sketch them as best as they can.
Teacher will circulate, assist, and reinforce as needed.

Closure
Review of new content: Leonardo da Vinci, why people sketch, how sketching can help you be a better observer and discover and see new things. Review of CDC vocabulary.

Session 2

Introduction
Review of new content discussed during last class: Leonardo da Vinci, why people sketch, how sketching can help you be a better observer and discover and see new things. Review of applicable CDC vocabulary.

Today we are going to examine some gadgets or machines and draw them to help us better understand them.

Directions/Demonstration

Encourage students to draw systematically, starting at one point and drawing each part and connection in order. Demonstrate this technique and emphasize that the best method for learning to draw is by practicing, observing and just trying.

Emphasize that in this kind of drawing it is not important that their drawing look exactly like the machine; instead it should show how the machine works. For example, getting the exact proportions for the parts is less important than showing how they connect to each other.

Encourage students to experiment with sketching enlarged views and cut-away views to show parts that are very small or obscured by other parts. Leonardo often left out the casing and structure surrounding machines in his illustrations so he could show the workings more clearly.

Guided Practice
1. Students will work in small groups (2-5).
2. Provide each group with one machine to examine in detail. Suggest that students take turns operating the machine while the others watch to see how each part moves.
3. Challenge each group with the following questions to encourage thought and discussion. Invite them to investigate their own questions as well.
    a. What is the function of this machine?

b. How many moving parts does it have?
c. How are the moving parts connected to each other?
d. What does each moving part do in the machine?
e. Which parts are elements of machines?

4. Place the machine at rest so that everyone in the group can see it and distribute paper, pencils and erasers.

5. Students should begin sketching diagrams of their machines. They should draw the machine from their own point of view first. Later they can trade places and draw it from different points of view to show all working parts.

6. When the diagrams are completed, students should add arrows and written notes to indicate directions of motion for each part, label the elements of machines involved, and explain connections.

7. Have students display and explain their diagrams to other groups.

8. If time permits, give each group a new machine to investigate and sketch.

Clean Up/Closure
Teacher will collect work for completion during the next class session. Review of new concepts and core concepts as we clean up.

Session 3

Introduction
Teacher will review content discussed in the previous class session, including CDC vocabulary and art terminology.

Today we are continuing with our observation of machines and drawing them. Students will join their group today in examining a new object (if they completed the first one in the previous class) and create sketches from observations.

Guided Practice
Teacher will assist students as they work on their own drawing—providing guidance as needed.

Clean Up/Closure
Teacher will collect projects for completion during next class. Review of concepts and CCD vocabulary.

Session 4

Introduction
Teacher will review content discussed in the previous class session, including CDC vocabulary.

Today we are sharing our sketches and discussing the questions that were posed in the beginning of the lesson prior to sketching. Teacher will allow students to volunteer their sketches and share their answers from the group discussion.

Clean Up/Closure

Teacher will collect projects for completion during next class. Review of concepts and CCD vocabulary.

Resources

David Macaulay's book *The Way Things Work*
The Back of a Napkin by Dan Roam
http://www.arvindguptatoys.com/arvindgupta/vinci-for-kids.pdf
http://www.instructables.com/id/The-Flying-Scrooge%3a-Ornithopter-of-Household-Items/

Real World Connections

Students can ask parents to help them locate examples of machine diagrams from home. The instructions provided by manufacturers with bicycles, kitchen appliances, tools, and lawn mowers often contain explanatory diagrams to help you understand these machines. Auto repair manuals also contain dozens of these diagrams. Many construction sets such as Lego® and K'NEX® also have similar kinds of diagrams to help you build particular toy designs.

When you have several diagrams from different sources, ask the students to compare them and discuss them using the following questions as starting points:

- What are some similarities and differences between different diagrams?
- Which diagrams do they think are the easiest to understand and the hardest to understand?
- What techniques have the illustrators of the better diagrams used to make their work clearer?
- What techniques can the students apply from these examples to make their own machine diagrams more understandable?