

Discovering Linear Perspective

Class: Art
Theme(s):

Quest for Knowledge

Arts and Architecture

Science & Technology

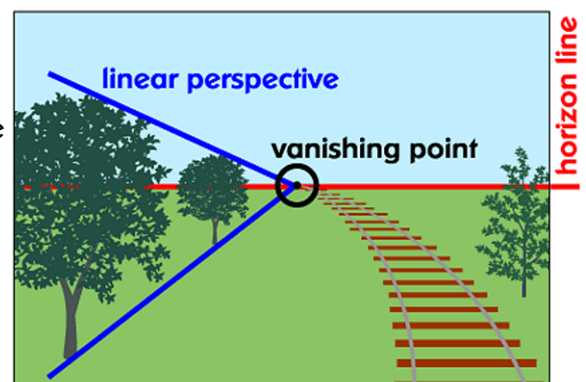
BACKGROUND

No one would deny that the painter has nothing to do with things that are not visible. The painter is concerned solely with representing what can be seen.

—Leon Battista Alberti, 1435

In the Middle Ages, the period before the Renaissance, most art in Europe featured heavenly figures devoted to the worship of Christ. Because the people in Medieval paintings were citizens of heaven and the artists painting these pictures had never actually seen heaven, the background was left to the imagination and the teachings of the church. Gold backgrounds were very common, as the air in heaven surely must be precious. When people became more interested in the world around them and the ideas of other people rather than heaven and the teachings of Christ and the saints, landscapes and buildings began to show up in paintings. Everyone could see landscapes and buildings everyday so one of the essential artistic problems of the Renaissance became how to paint landscapes and buildings in pictures so that they looked the same as in real life.

In the Renaissance, painters needed to be able to translate the three-dimensional world around them onto the two-dimensional surface of a painting, called the "picture plane." The solution was "linear perspective"; the idea that converging lines meet at a single vanishing point and all shapes get smaller in all directions with increasing distance from the eye. The discovery of perspective is attributed to the architect Filippo Brunelleschi (1377-1446), who suggested a system that explained how objects shrink in size according to their position and distance from the eye. However, the nature of Brunelleschi's system and date of its discovery remain unclear.



In 1435, Leon Battista Alberti (1404-1472), provided the first theory of what we now call linear perspective in his book, *On Painting*. The impact of this new system of measurement in paintings was enormous and most artists painting in Europe after 1435 were aware of the principles Alberti outlined in his book. First, an artist created a "floor" (a ground or stage on which figures and objects would be placed) in a painting and drew a receding grid to act as a guide to the relative scale of all other elements within the picture. Alberti suggests relating the size of the floor squares to a viewer's height. This suggestion is important because it reveals an underlying principal of the Renaissance. The act of painting would no longer be to glorify God, as it had been in Medieval Europe. Painting in the Renaissance related instead, to those people looking at the painting.

RESOURCES

Alberti, Leon Battista. *On Painting*. [First appeared 1435-36] Translated with Introduction and Notes by John R. Spencer. New Haven: Yale University Press. 1970 [First printed 1956]. Online at <http://www.noteaccess.com/Texts/Alberti/>

DISCOVERING LINEAR PERSPECTIVE: BACKGROUND (continued)**CLASSROOM TIME**

One or two 40 minute periods

OBJECTIVES

Students will:

- Understand the historical development and context of linear perspective in two-dimensional works of art.
- Understand the concept of linear perspective in two-dimensional works of art.
- Analyze the use of linear perspective in Renaissance paintings.
- Draw objects using linear perspective.

PENNSYLVANIA ACADEMIC STANDARDS**Arts and Humanities**

- 9.1.8. D. Demonstrate knowledge of at least two styles within each art form through performance or exhibition of unique works.
- 9.1.8. J. Incorporate specific uses of traditional and contemporary technologies within the design for producing, performing and exhibiting works in the arts or the works of others.
- Explain and demonstrate traditional technologies.
- 9.2.8 C. Relate works in the arts to varying styles and genres and to the periods in which they were created.
- 9.2.8 D. Analyze a work of art from its historical and cultural perspective.

MATERIALS

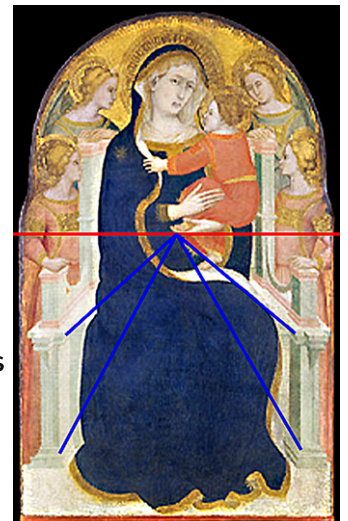
- LCD Projection or large display-sized reproductions of *Madonna and Child Enthroned* (Follower of Pietro Lorenzetti).
- Computer stations to access the *Renaissance Connection* perspective interactive or worksheets containing interactive elements.
- Pencils (any color) for worksheets
- Rulers, one per student, for worksheets
- Optional Resources
- The "Background" section of this lesson, reproduced as a student handout.

ART LESSON**1. Setting the Stage**

(Note: The background section of this lesson might serve as a handout to help students in this activity.)

During the Renaissance, artists searched for ways to make two-dimensional paintings accurately represent the three-dimensional world they saw around them. One of the methods artists used to achieve this goal was linear perspective, the idea that converging lines meet at a single vanishing point and all shapes get smaller in all directions with increasing distance from the eye.

Display a reproduction of *Madonna and Child Enthroned* (Follower of Pietro Lorenzetti) and demonstrate the concept for students by drawing or tracing the lines implied by



Follower of Pietro Lorenzetti
Madonna and Child Enthroned with Angels, 1360/70
Tempera on panel



ZOOM IN

DISCOVERING LINEAR PERSPECTIVE: ART LESSON (continued)

the base and arms of the throne that converge at the vanishing point, just below the baby in the painting. The artist who painted this picture used linear perspective to convey a sense of three-dimensional space.

Artists in the early part of the Renaissance struggled to master techniques to create an accurate illusion of three-dimensional space in their paintings. Once Leon Battista Alberti published a mathematical method for calculating linear perspective accurately, other artists learned the method and became better at linear perspective.

2. The Renaissance Connection

In the *Renaissance Connection* perspective interactive (www.renaissanceconnection.org/perspective.html), there are three paintings that use linear perspective to create an illusion of three-dimensional space. Use the drawing tools provided to trace the lines implied by architecture, furniture, etc. to find the vanishing points in each painting. Alternatively, print out black and white reproductions and provide copies of each painting to students. With rulers and pencils, students should trace the implied lines on the copies. Why might some of these paintings use linear perspective more accurately than others?

Use the *Renaissance Connection* perspective interactive to demonstrate how to draw an object (chair or dresser) in the blank room provided or print out the room worksheet and demonstrate using markers.

Instruct students to use the *Renaissance Connection* perspective interactive drawing tools to draw objects such as furniture in the room provided, or print out the room worksheet and instruct students to draw objects in the room using pencils and rulers.

3. Summary

The ability to create the illusion of three-dimensional space in paintings resulted in works of art that were like windows, giving viewers the impression that they were looking through a window frame onto a scene in the real world. Later, innovations in art, like abstraction and modernism, gave us many ways to judge the effectiveness of works of art, but paintings that "look real" are still admired because of the artistic skill required to achieve the illusion of reality.

4. Assessment

Did the student demonstrate his or her understanding of linear perspective by tracing the implied lines in three paintings to find the vanishing point? Did the student successfully draw an object using linear perspective?

5. Related Activity

Have students search the Internet and/or art books and magazines to find an example of a work of art that uses linear perspective to create the illusion of three-dimensional space.

VOCABULARY

linear perspective: the idea that converging lines meet at a single vanishing point and all shapes get smaller in all directions with increasing distance from the eye.

medieval: the Middle Ages -- a period in history between the last emperor of Rome, 475 A.D., and the Renaissance, about 1450.

picture plane: the two-dimensional, flat surface of a painting, drawing, or print.

three-dimensional: having height, width, and depth, as in the case of free-standing sculpture.

two-dimensional: a flat surface which has only height and width.