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GOALS OF THE UNIT

GENERAL GOALS OF THE UNIT

The general purposes of this Source Guide are:

- To develop knowledge of the nature of invention and its structure.
- To develop knowledge and appreciation of practical creation in this and other cultures, both past and contemporary.
- To develop respect for both expression and skill in the art of invention.
- To help students understand the creative process.

SPECIFIC GOALS OF THE UNIT

The specific purposes of this Source Guide are that gifted and talented pupils will:

- Understand that an inventor's work reflects the society in which he or she lives.
- Discover that inventors find their own unique ways of expressing ideas and feelings.
- Accept a broad range of inventions with an understanding of inventors and how their work is developed.
- Be creative.

TAXONOMY OF COGNITIVE OBJECTIVES

KNOWLEDGE	LEARNING THE INFORMATION
COMPREHENSION	UNDERSTANDING THE INFORMATION
APPLICATION	USING THE INFORMATION
ANALYSIS	EXAMINING SPECIFIC PARTS OF THE INFORMATION
SYNTHESIS	DOING SOMETHING NEW AND DIFFERENT WITH THE INFORMATION
EVALUATION	JUDGING THE INFORMATION

Benjamin S. Bloom et al., *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain* (New York: David McKay Company, 1956)

TAXONOMY OF AFFECTIVE OBJECTIVES

RECEIVING	STUDENTS ARE WILLING TO BE AWARE OF AN EVENT AND TO PAY ATTENTION TO IT.
RESPONDING	STUDENTS REACT TO AN EVENT THROUGH SOME FORM OF PARTICIPATION.
VALUING	THE EVENT HAS VALUE TO STUDENTS AND THEY TREAT IT AS A BELIEF OR WITH A POSITIVE ATTITUDE.
ORGANISATION	AS STUDENTS ENCOUNTER SITUATIONS FOR WHICH MORE THAN ONE VALUE IS RELEVANT, THEY ORGANISE THE VALUES, DETERMINE THE INTER-RELATIONS AND ACCEPT SOME AS DOMINANT.
CHARACTERISATION	STUDENTS CONSISTENTLY ACT IN ACCORDANCE WITH THE VALUES THEY ACCEPT AND THIS BEHAVIOUR BECOMES A PART OF THEIR PERSONALITY.

David R. Krathwohl et al., *Taxonomy of Educational Objectives, Handbook II: Affective Domain* (New York: David McKay Company, 1964)

LEONARDO da VINCI (1452-1519)

BACKGROUND INFORMATION

Leonardo da Vinci lived and worked in the beginning of the Renaissance period, the era of the great revival of art and learning in Europe. He was a musician, sculptor, artist, architect, botanist, military and civil engineer, writer, mathematician and inventor. What a **versatile** individual!

Leonardo was born on 15 April, 1452, near the town of Vinci, about thirty kilometres west of Florence, Italy. Young boys of that day were sent to live and work with someone who could teach them a trade. Leonardo worked as an apprentice to the painter Verrocchio. He had a keen sense of observation. His ability to see and sketch in great detail was quickly recognised. His sketches were called **cartoons** and were meant to illustrate what he proposed to paint or build.

During that time it was customary for a very rich person, or the monks from a church or monastery, to **commission** an artist to do a portrait or a painting on the wall of a church. Some of Leonardo's famous works were done in this manner. Two of his most famous paintings are "The Last Supper", painted on the wall of a church in Milan, and the "Mona Lisa", the portrait of the wife of a rich merchant named Gioconda.

Leonardo's keen powers of observation included all areas. He made superb anatomical and botanical drawings. He observed and sketched birds in flight, writing the first **treatise** on that subject. As a young man he was recognised as an accomplished musician and as a powerful athlete. He was considered a leading engineer of his time. He designed a city with canals and streets at two levels, the lower for vehicles and the upper for pedestrians. He sketched plans for two-level bridges and a drawbridge designed to swing back and forth across a moat.

Vocabulary

versatile	treatise
cartoons	ratchet
commission	ambidextrous
heritage	

TIME LINE

LEONARDO da VINCI

WORLD EVENTS

1453—Fall of Constantinople to the Turks ends Eastern Empire after 1000 years
1492—Columbus's first voyage to the New World
1502—Amerigo Vespucci's second voyage to the New World led to naming it America
—Copernicus founded present-day astronomy based on earth as a moving planet
—Invention of the printing press

ARTISTS

1508–1512
—Michelangelo paints ceiling of Sistine Chapel
Rafael
Bosch

MUSIC

1400s—Virginal, harpsichord, trombone, hunting horn developed
—Madrigal singing

ACTIVITIES

LEONARDO da VINCI

Knowledge

Prepare a list of Leonardo da Vinci's inventions.

LEONARDO da VINCI

Knowledge

Draw and label the parts of one of Leonardo da Vinci's inventions. Explain its uses.

LEONARDO da VINCI

Comprehension

Research and report on the development of one of Leonardo's inventions. The report may be oral, written, cartooned or—your choice!

LEONARDO da VINCI

Comprehension

What two-level bridges are you familiar with? Leonardo designed a two-level bridge in 1490. What are the characteristics and features of two-level bridges?

LEONARDO da VINCI

Application

Sketch your interpretation of one of Leonardo's inventions. Explain the modifications you have made to the invention and why you believe they are necessary.

LEONARDO da VINCI

Application

How does Leonardo's study of anatomy contribute to his work as an artist? What effect did this study have on his art? Why would this be an effect of knowing anatomy?

LEONARDO da VINCI

Analysis

Interpret Leonardo's statement regarding architecture, sculpture and painting: "In times of peace, I believe I can give as complete satisfaction as anyone else." Explain what you think he meant and give at least three reasons he might have felt this way.

LEONARDO da VINCI

Analysis

Which of da Vinci's inventions can be grouped because they are alike in some way? Explain your reasons for the groups and give one or more labels to each group.