

# HUMANITAS INTERDISCIPLINARY THEMATIC UNIT

School: El Camino Real High School

Grade: Ninth

Team Members:

Regina Goad

Denise Leonard

Lori LoCurto

Nicole Salottolo

Dean Sodek

Subjects:

Life Skills

English

Algebra

English

Biology

## THEME/OUTCOMES

Unit Theme: The Road to Discovery: Identifying Problems & Finding Solutions

### Rationale:

Individuals are constantly challenged by the problems and conflicts that they encounter in life. The process of resolving these problems shapes us as individuals and has an impact on the world around us. In literature, mathematics and science, as well as in daily life, how individuals approach and resolve these problems ultimately defines their journey and influences the world.

### Outcomes for Students:

Students will be able to analyze literary arcs and character transformations that result from conflict resolution. Students will demonstrate a deeper understanding of science and math content while detailing the trials and tribulations of various mathematicians and DNA scientists. Students will complete a reflective career/personal inventory that develops immediate and long-term goals for academic and personal success through high school.

### ESSENTIAL QUESTIONS:

- How do humans grow and develop by working through problems and conflict that they encounter?
- Why is it important for people to take personal responsibility for the actions they choose?
- In what ways is the nature of scientific and mathematical knowledge *cumulative*?
- In what ways can the scientific method and other approaches to problem solving serve as important life skills?
- How can linear models be used to solve problems?

### INTERDISCIPLINARY ESSAY PROMPT

On Life's winding road, individuals are constantly challenged by the problems that they encounter along the way. Write an essay that explains the importance of problem solving using a character from literature, a mathematician, and a DNA scientist as examples. What was the problem or conflict encountered? How was the problem resolved? What was the lasting impact of the problem-solving approach? Finally, discuss a problem that a teenager might encounter while adjusting to high school. Discuss the specific approach they may use to address the problem as well as the expected outcome of their efforts.

*Shared instructional strategies (Cornell Notes, Cooperative grouping, Shared Inquiry, Socratic Seminar)*

Name: Denise Leonard & Nicole Salottolo Subject: English

Focus Standards:

3.0: Students read and respond to historically or culturally significant literature that reflect and enhance their studies of history and social science. Conduct in-depth analyses of recurrent patterns and themes.

W1.3 Structure ideas and arguments in a sophisticated way and support them with precise examples.

(One to two primary standards per subject area. Write abbreviated standard after number.)

Materials:

Readings:

- The Odyssey by Homer
- Great Expectations by Charles Dickens
- A Night to Remember by Walter Lord
- Selected Short Stories

Video (selected scenes for analysis):

- Great Expectations
- The Odyssey

Humanitas Bookmark Project:  
English Component

Activities:

**Character Reflections:** Students read literature and reflect (through writing and discussion) on characters in conflict and how they react to resolve the problem.

Ultimately, students reflect on how the character has changed as a result of this process.

**Character Quotations:** Read text and analyze significant quotations.

Discuss the characterizations of Odysseus and Pip as well as how they resolve the many conflicts they encounter.

**Humanitas Bookmark Project:**

Create a bookmark featuring a literary character, the problem he/she encountered, how it was resolved, and how the character was affected.

The Humanities Connection...

The internal and external conflicts that literary characters encounter are means for transformation, as characters learn more about themselves and others. Literature offers us the opportunity to reflect on multiple perspectives of how to identify problems and find solutions through its characters and their lives.

Name: Regina Goad Subject: Life Skills

Focus Standards:

Students learn a life and career planning process that they can use throughout their high school career and beyond.

Students will fulfill high school graduation requirements by selecting a career pathway.

(One to two primary standards per subject area. Write abbreviated standard after number.)

Materials:

Career Interest Surveys

Humanitas Bookmark Project:  
Health Component

Activities:

**Career Interest Survey:** Students will complete the Career Interest Survey. After completing the inventory students will research five careers of their choice. Students will write an essay and present on the career of their choice.

**Humanitas Bookmark Project:** Students create a bookmark that details a problem that he/she has encountered, how they worked to resolve it, and how the experience affected them.

The Humanities Connection...

These activities allow students an opportunity to examine a career and gather information that allows them to focus on decision-making skills, career research, and self-awareness.

Name: Lori LoCurto Subject: Algebra

Focus Standards:

Students will be able to solve and graph multi-step problems involving linear equations in two variables.

(One to two primary standards per subject area. Write abbreviated standard after number.)

Materials:

Readings:

Mathematician Profiles from Mathematician's Are People, Too! by Luetta & Wilbert Reimer

- Thales
- Pythagoras
- Archimedes
- Galileo
- Descartes
- Einstein

Math Problem Essay:

- Cell phone plan data sheets

Humanitas Bookmark Project:  
Math Component

Activities:

**Mathematician Journals:** Students keep a mathematician journal that describes the problems that various mathematicians encounter and how they worked to solve them.

**Math Problem Essay:** Students evaluate data from several different cell phone plans, use the data to determine which plan is better suited to their needs, and explain their findings in an essay.

**Humanitas Bookmark Project:** Create a bookmark featuring a mathematician, the problem he/she encountered, how it was resolved, and the significance of the discovery.

The Humanities Connection...

Throughout human history, civilizations and societies have advanced as a direct result of expanding mathematical knowledge. An understanding of mathematics enhances our ability to identify problems, communicate ideas, and develop innovative solutions to the problems we face.

Name: Dean Sodek Subject: Biology

Focus Standards:

5.a. Students know the general structures and functions of DNA, RNA, and protein.

5.b. Students know how to apply base-pairing rules to explain precise copying of DNA during semiconservative replication and transcription of information from DNA into mRNA.

(One to two primary standards per subject area. Write abbreviated standard after number.)

Materials:

DNA Replication Activity

DNA Extraction Lab:

- Wheat Germ
- Dishwashing liquid
- Sodium bicarbonate
- Meat tenderizer (papain)
- Ice
- Beakers

DNA Scientist Storybook

Readings:

The Discoveries (excerpt) by Alan Lightman

Humanitas Bookmark Project:  
Science Component

Activities:

**DNA Replication Activity:**

Students create and assemble nucleotide models to demonstrate the structure of the DNA molecule.

**DNA Extraction Lab:** Students will perform a DNA extraction to isolate the genetic material of a cell.

**DNA Scientist Storybook:**

Students create a children's storybook that explains the series of discoveries that demonstrated DNA as the genetic material. The work of Griffith, Hershey & Chase, Avery, Chargaff, and Watson & Crick will be emphasized.

**Humanitas Bookmark Project:**

Create a bookmark featuring a DNA scientist, the problem he/she encountered, how it was resolved, and the significance of the discovery.

The Humanities Connection...

The desire to identify problems and discover solutions is an integral part of the human experience. Scientists discovered the nature of DNA in successive steps, building upon the work of others, to unravel the mysteries of the molecule and life itself.