



Title of the STEAM Unit: The Renaissance Era

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| RELATED SUBJECTS | GRADE RECOMMENDATIONS | TOTAL ACTIVITY TIME | LEARNING OBJECTIVES DURING THE LESSON SUBJECT-SPECIFIC COMPETENCIES | LEARNING OBJECTIVES AFTER THE LESSON |
|---|-----------------------|---------------------|--|--|
| Science, Arts, Mathematics, Engineering, Technology | grades 9-10 | 4-6 weeks | <p>Develop an understanding of the Renaissance's impact on modern art, science, technology, and mathematics.</p> <p>Learn about significant Renaissance figures and their contributions to various STEAM fields.</p> | <p>Apply problem-solving, critical thinking, and creativity in hands-on projects related to Renaissance innovations.</p> <p>Foster collaboration and communication through group projects and presentations.</p> |





OVERVIEW: TOPIC & PURPOSE

This interdisciplinary STEAM course focuses on the Renaissance period (14th–17th centuries). Students will explore how art, science, engineering, and mathematics flourished during the Renaissance and laid the groundwork for modern advancements. Through hands-on projects, students will connect historical events and figures to contemporary STEAM concepts, deepening their understanding of this pivotal era in human history.

ACTIVITY PREREQUISITES

Content knowledge needed for the activity

STEAM ELEMENTS

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| ELEMENT 1: context presentation | Real-world / scientific / artistic context of the Renaissance era. |
| ELEMENT 2: creative design | Through hands-on projects, students will connect historical events and figures to contemporary STEAM concepts. |
| ELEMENT 3: emotional and social learning | Collaboration and communication through group projects and presentations. |





STEAM SUBJECT ELEMENTS

| STEAM SUBJECTS | SCIENCE | TECHNOLOGY | ENGINEERING | ARTS | MATHEMATICS |
|---|---|---|---|--|--|
| SHORT INTRODUCTION TO RELATED SUBJECT ELEMENTS | Basics of astronomy through Galileo's work. | Creating a printing block to simulate the printing process. | Engineering principles, mechanical design based on da Vinci's sketches. | Understanding of how geometry revolutionized art during the Renaissance. | Understanding of how geometry revolutionized art during the Renaissance. |

SYLLABUS

| LESSON UNITS (90-120 min) | SUBJECTS | TOPIC OF THE UNIT | LEARNING OBJECTIVES DURING THE LESSON: SUBJECT SPECIFIC COMPETENCIES | LEARNING OBJECTIVES AFTER THE LESSON: STEAM COMPETENCIES |
|------------------------------|---------------------------------|--|--|--|
| 1 | Introduction to the Renaissance | <ul style="list-style-type: none"> Class discussion: What was the Renaissance, and why was it significant? Timeline creation: Students will create a timeline of important events and figures. STEAM Focus: Historical context with STEAM connections introduced. | <p>Define the Renaissance and explain its importance.</p> <p>Recognize key figures and themes that shaped the Renaissance.</p> | Students will be able to describe the broader significance of the Renaissance and identify key events and figures. |





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| <p>2</p> | <p>Mathematics and Art – The Geometry of Perspective</p> | <ul style="list-style-type: none"> • Art and math activity: Students will draw a simple Renaissance scene using one-point perspective. • Analysis of famous works (e.g., "The Last Supper" by Leonardo da Vinci). • STEAM Focus: Mathematics (geometry) in art. | <p>Understand the concept of linear perspective in Renaissance art.</p> <p>Use geometry to create a drawing using one-point perspective.</p> | <p>Students will demonstrate an understanding of perspective and how geometry revolutionized art during the Renaissance.</p> |
| <p>3</p> | <p>Engineering – Leonardo da Vinci's Inventions</p> | <ul style="list-style-type: none"> • Project: Create a working model of a simple machine or device based on da Vinci's drawings. • Discussion: How did da Vinci's engineering designs influence future technologies? • STEAM Focus: Engineering principles, mechanical design. | <p>Explore Leonardo da Vinci's contributions to engineering and design.</p> <p>Build a model inspired by da Vinci's sketches (e.g., catapult, flying machine).</p> | <p>Students will apply basic engineering principles to construct a working model and understand da Vinci's influence on modern technology.</p> |
| <p>4</p> | <p>Galileo and the Physics of Astronomy</p> | <ul style="list-style-type: none"> • Build a telescope using lenses and cardboard tubes. • Explore Galileo's observations and discuss their historical significance. • Test the telescope in class and evaluate how well it | <p>Students will explain Galileo's role in advancing scientific thought and construct a basic telescope using principles of optics.</p> | <p>Learn about Galileo's contributions to modern science, particularly in astronomy.</p> <p>Construct a simple telescope and explore</p> |





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| | | <p>functions (e.g., magnification power, clarity).</p> <ul style="list-style-type: none"> • STEAM Focus: Science (astronomy, optics), technology. | | <p>basic principles of optics.</p> |
| 5 | <p>The Printing Press and Information Revolution</p> | <ul style="list-style-type: none"> • Hands-on activity: Carve a printing block and print a simple text or design. • Research work and discussion: How did the printing press influence the Renaissance and the spread of ideas? • STEAM Focus: Technology (printing press), communication. | <p>Study the invention of the printing press and its impact on communication and knowledge dissemination.</p> <p>Create a printing block to simulate the printing process.</p> | <p>Students will explain how the printing press transformed communication and create a basic printed piece using block printing techniques.</p> |

EVALUATION PLAN BY LESSON

| LESSON | EVALUATION CRITERIA | EVALUATION METHOD |
|--------|---|---|
| 1 | Does the student understand the broader context of the Renaissance and identify key elements and figures? | Classroom participation in discussions and timeline creation will be observed. |
| 2 | Does the student understand how geometry revolutionized art during the Renaissance? | Evaluating student drawings for correct use of one-point perspective. Students will exchange drawings and provide feedback on perspective accuracy, allowing for collaborative learning. |





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| 3 | Is the student able to apply basic engineering principles to construct a working model based on de Vinci's ideas? Does the student understand da Vinci's influence on modern technology? | Each student or group presents their da Vinci-inspired model, explaining how it works and what they learned. |
| 4 | Does the student understand Galileo's contributions to modern science, particularly in astronomy? | Model presentation, group discussion, class discussion |
| 5 | Does the student understand how the printing press transformed communication? | Reporting on the research work, model presentation. |

NOTES

Optional

ACTIVITY SHEETS TO BE LINKED

Optional

EVALUATION MATERIALS TO BE LINKED

Optional

REFERENCES / SUPPORTING MATERIALS TO BE LINKED

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