Cliffside Park High School
STEAM Curriculum
August 2018

GRADE: 9-12

Unit Name: Isometric Drawings

Duration: 4-6 weeks

Enduring Understanding:

- Significance of isometric drawings vs. standard two-dimensional drawings

Essential Questions:

- How do you properly dimension a drawing?
- How is the geometry of an object organized in a drawing?
- How can we use coordinates to draw objects?

Assessments:

Formative:

- Completion of STEAM drawings in engineering notebook.
- List of steps necessary to complete blueprint.
- Ability to use programs necessary for full attainment of objectives.

Summative:

- Unit test on student learning objectives

Benchmarks:

- Benchmark exam on programs utilized in STEAM classes.

Alternative:

- Students can create a “How to” book that explains the process with illustrations and explanations.

Relevant Standards:

NJSLS

- 8.2.12.A.1--Propose an innovation to meet future demands supported by an analysis of the potential full costs, benefits, trade-offs and risks, related to the use of the innovation.
- 8.2.12.A.2--Analyze a current technology and the resources used, to identify the trade-offs in terms of availability, cost, desirability and waste.
- 8.2.12.A.3--Research and present information on an existing technological product that has been repurposed for a different function.
- 8.2.12.B.1--Research and analyze the impact of the design constraints (specifications and limits) for a product or technology driven by a cultural, social, economic or political need and publish for review.
- 8.2.12.B.2--Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation and maintenance of a chosen product.
- 8.2.12.B.3--Analyze ethical and unethical practices around intellectual property rights as influenced by human wants and/or needs.
- 8.2.12.B.4--Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.
- 8.2.12.B.5--Research the historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product, and present the competing viewpoints to peers for review.

New Jersey Career Ready Practices Standards

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
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- CRP11. Use technology to enhance productivity.

Interdisciplinary Activities and Connections:

- Members of Art department can work with the STEAM and 3D Design classes work on cross-curricular assessments

Core Instructional Materials/Resources/Digital Tools:

- STEAM approved instructional materials and resources
- Youtube
- Teachertube
- Power tools
- Wood, metal, and paper materials

Modifications to Support	Modifications to Support	Modifications to Support Our Learners

Gifted and Talented Students	English Language Learners	(Students with IEPs/504s and At-Risk Learners)
• Amplify learning by providing more challenging texts • Create Google Slide presentation on pertinent topics from within the unit • Allow G & T students to identify and define higher level terms within the unit of study • Direct G & T students into internship programs or volunteer opportunities that stress the importance of citizenship	• Allow for peer to peer collaboration within the classroom • Assign an English speaking mentor to help student with language difficulties • Allow ELL students the opportunity illustrate one of the scenes from the movie • Have ELL teacher assist in appropriate modifications and accommodations for all assessments • Use information from the WIDA testing to help facilitate individualized assessments	• Review student individual educational plan and/or 504 plan for instructional, assessment, and environmental supports • Students will be given flexibility with assessments (option of having alternative assessments in lieu of assessments that non-IEP/504 students are taking) • Text to speech • Students will be provided with graphic organizers • Students will have access to maps, illustrations, and other materials that will allow them to comprehend the material in a non-literacy setting • Students will not be penalized for spelling and grammar errors • Teachers will meet with collaborative teacher to discuss individual modifications for each student

	for ELL students ● Allow student access to native dictionary to help with the understanding of vocabulary within the unit ● Student may create a Google Slide presentation and explain information in their native language	

GRADE: 9-12

Unit Name: Penguin House **Duration: 4-6 weeks**
Enduring Understanding: ● Importance of insulation within a structure
Essential Questions: ● How will I build a structure that will withstand heat? ● Why is heat attracted to certain materials?
Assessments: **Formative:**

- Completion of STEAM drawings in engineering notebook.
- List of steps necessary to complete blueprint.
- Ability to use programs necessary for full attainment of objectives.

Summative:

- Unit test on student learning objectives

Benchmarks:

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Modifications to Support Gifted and Talented Students	Modifications to Support English Language Learners	Modifications to Support Our Learners (Students with IEPs/504s and At-Risk Learners)
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internship programs or volunteer opportunities that stress the importance of citizenship	• Have ELL teacher assist in appropriate modifications and accommodations for all assessments • Use information from the WIDA testing to help facilitate individualized assessments for ELL students • Allow student access to native dictionary to help with the understanding of vocabulary within the unit • Student may create a Google Slide presentation and explain information in their native language	• Teachers will meet with collaborative teacher to discuss individual modifications for each student

GRADE: 9-12

Unit Name: Trebuchet

Duration: 4-6 weeks

Enduring Understanding:

- Importance of gravity on an object in the air.

Essential Questions:

- Which materials will work best for the trebuchet?
- How will I be able to construct a trebuchet that will withstand conditions?
- How will the trebuchet be centered on the ground?

Assessments:

Formative:

- Completion of STEAM drawings in engineering notebook.
- List of steps necessary to complete blueprint.
- Ability to use programs necessary for full attainment of objectives.

Summative:

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Benchmarks:

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Unit Name: Balsa Airplane **Duration: 4-6 weeks**
Enduring Understanding: ● Impact of materials that fly through the air
Essential Questions: ● How will geometry impact the construction of the balsa airplane? ● How will the width and length of materials influence a flight?
Assessments: **Formative:** ● Completion of STEAM drawings in engineering notebook. ● List of steps necessary to complete blueprint.

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Summative:

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