

SCHOOL DISTRICT OF THE CHATHAMS

Creativity & Design

Grade 7

Marking Period

Course Overview

Students will engage in daily creative warm ups which will sharpen their thinking and ability to develop unique ideas. Students will utilize creative thinking strategies while engaging in projects inspired by their individual interests and goals. This type of creative exploration will be student-centered and teacher guided as students communicate their knowledge through art, technology and a variety of other mediums. Use of collaborative meetings will allow students to see the value in each other as resources and critical thinkers as they work through their design process. Students will assist in troubleshooting and enhancing one another's knowledge base to produce and evolve ideas that can be successful.

New Jersey Student Learning Standards

The New Jersey Student Learning Standards (NJSLS) can be located at www.nj.gov/education/cccs/2020/.

Engineering Design

8.2.8.ED.1: Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer

8.2.8.ED.2: Identify the steps in the design process that could be used to solve a problem.

8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).

8.2.8.ED.4: Investigate a malfunctioning system, identify its impact, and explain the step-by-step process used to troubleshoot, evaluate, and test options to repair the product in a collaborative team.

8.2.8.ED.5: Explain the need for optimization in a design process.

8.2.8.ED.6: Analyze how trade-offs can impact the design of a product.

8.2.8.ED.7: Design a product to address a real-world problem and document the iterative design process, including decisions made as a result of specific constraints and trade-offs (e.g., annotated sketches).

Technology Standards

9.4.8.IML.6: Identify subtle and overt messages based on the method of communication.

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9.4.8.CI.2: Repurpose an existing resource in an innovative way (e.g., 8.2.8.NT.3).

9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2).

9.4.8.CI.4: Explore the role of creativity and innovation in career pathways and industries.

Career Ready Practices

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

Interdisciplinary Connections

MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Units of Study

Unit 1: Understanding Design and Creativity as Tools (~28 days)

- Where does inspiration come from to help us develop creative and innovative work?
- What are the different strategies for studying a topic so that we can increase our depth of knowledge?
- How can we effectively use different methods to develop ideas inspired by research and knowledge?

Unit 2: Creative Exploration (~12 days)

- How can we identify and recognize each other's strengths to help enhance the knowledge base of an individual as well as a collaborative group?
- How can we use our strengths to inspire new ideas in ourselves and others?
- How can we think critically and communicate productive feedback to assist in the development of others' designs?
- How can we analyze the success of a design?

Learning Objectives/Discipline Standards of Practice

Learning Objectives

- Identify where inspiration has come from when observing inspired designs.
- Reflect on thought processes to identify areas of interest and inspiration while approaching academic studies.
- Apply creative thinking strategies to imagine, design and create innovative ideas.
- Understanding of the design elements to guide and develop ideas.
- Understand the differences and interconnectedness between personal interests and the designed world.
- Apply the engineering design process through discussions, examples and mini challenges.
- Apply methods and processes to promote the evolution of ideas.
- Reflect upon their interests, strengths and weaknesses and learn how to develop them.
- Understand the differences and interconnectedness between personal interests and the designed world.
- Apply the engineering design process through discussions, examples and mini challenges.
- Apply methods and processes to promote the evolution of ideas.
- Reflect upon their interests, strengths and weaknesses and learn how to develop them.
- Recognize fellow students as important resources as they work through their own design process.
- Use our own strengths to inspire new ideas in ourselves and others.

Discipline Standards of Practice:

- Computing Systems
 - People interact with a wide variety of computing devices that collect, store, analyze, and act upon information in ways that can affect human capabilities both positively and negatively. The physical components (hardware) and instructions (software) that make up a computing system communicate and process information in digital form.

- Networks and the Internet
 - Computing devices typically do not operate in isolation. Networks connect computing devices to share information and resources and are an increasingly integral part of computing. Networks and communication systems provide greater connectivity in the computing world.
- Impacts of Computing
 - Computing affects many aspects of the world in both positive and negative ways at local, national, and global levels. Individuals and communities influence computing through their behaviors and cultural and social interactions, and, in turn, computing influences new cultural practices.
- Data & Analysis
 - Computing systems exist to process data. The amount of digital data generated in the world is rapidly expanding, so the need to process data effectively is increasingly important. Data is collected and stored so that it can be analyzed to better understand the world and make more accurate predictions.
- Algorithms & Programming
 - An algorithm is a sequence of steps designed to accomplish a specific task. Algorithms are translated into programs, or code, to provide instructions for computing devices. Algorithms and programming control all computing systems, empowering people to communicate with the world in new ways and solve compelling problems.
- Engineering Design
 - People design for enjoyment and to solve problems, extend human capabilities, satisfy needs and wants, and improve the human condition. Engineering Design, a systematic approach to creating solutions to technological problems and finding ways to meet people's needs and desires, allows for the effective and efficient development of products and systems.
- Interaction of Technology and Humans
 - Societies influence technological development. Societies are characterized by common elements such as shared values, differentiated roles, and cultural norms, as well as by entities such as community institutions, organizations, and businesses. Interaction of Technology and Humans concerns the ways society drives the improvement and creation of new technologies, and how technologies both serve and change society.
- Nature of Technology
 - Human population, patterns and movement focus on the size, composition, distribution, and movement of human populations and how they are fundamental and active features on Earth's surface. This includes understanding that the expansion and redistribution of the human population affects patterns of settlement, environmental changes, and resource use. Patterns and movements of population also relate to physical phenomena including climate variability, landforms, and locations of various natural hazards and their effects on population size, composition, and distribution.
- Effects of Technology on the Natural World
 - Many of engineering and technology's impacts on society and the environment are widely regarded as desirable. However, other impacts are regarded as less desirable. Effects of Technology on the Natural World concerns the positive and negative ways that technologies affect the natural world.

- Ethics & Culture

- Ethics and Culture concerns the profound effects that technologies have on people, how those effects can widen or narrow disparities, and the responsibility that people have for the societal consequences of their technological decisions.

Instructional Resources and Materials

Whole class resources have been identified with an asterisk.

Resources

- *Launch: Using Design Thinking to Boost Creativity and Bring Out the Maker in Every Student* by John Spencer and A.J. Juliani
- *The Innovator's Mindset: Empower Learning, Unleash Talent, and Lead a Culture of Creativity* by George Couros
- *The Book of Doing: Everyday Activities to Unlock Your Creativity and Joy* by Allison Arden
- *Creative Workshop: 80 Challenges to Sharpen Your Design Skills* by David Sherwin

Materials

- Access to basic hand tools and fabrication equipment.
 - Hot Glue Guns
 - X-Acto Knives
 - Hot Glue Gun & XActo Knife Rules/Procedures
- Access to basic hand tools and fabrication equipment (adhesives, cutting tools, etc.)
- Materials for design challenges
 - Cardboard
 - Felt
 - Rubber Bands
 - Plastic Cups
 - Construction Paper
 - Foam Core
 - Popsicle Sticks
 - Masking Tape
 - Glue
 - Straws
 - Markers
 - Colored Pencils
 - Paper Clips
 - Binder Clips
 - Foam
 - Building Blocks
- Access to video equipment (cameras, microphones, etc)

Assessment Strategies

Revision Date: December 2021

Assessment is designed to measure a student's mastery of a course standard and learning objective. Assessment can be used for both instructional purposes (formative assessment) and for evaluative purposes (summative assessment).

Assessment Methods:

- Students engage in mini/exploratory activities at the beginning of the marking period which allow for them to demonstrate their understanding of basic creative concepts (approximately three).
- Students will then engage in a final, independent project which requires that they integrate previous creative concepts to a project of their choosing.
 - This is assessed using a rubric and in-person meetings with the teacher.
 - Student Evidence Rubric