STEM SCHOOL CHATTANOOGA
Mini-PBL
Unit Plan Template

Kinetic Art

Standards (Learning Targets)

Learning Target 4: Connect - Research and connect an unfamiliar subject to personal experiences to develop meaning through art-making.

Grade Level	9th	Unit Length	3 Weeks
Mini-PBL Overview	In this unit students will work collaboratively in groups (2-3) to research and compile information on twelve essential questions. ● 1 What is movement? ● 2 What is balance? ● 3 What is positive space? ● 4 What is negative space? ● 5 What is energy? ● 6 What is kinetic energy? ● 7 What is potential energy? ● 8 What is mechanical energy? ● 9 What is kinetic art? ● 10 What is kinetic sculpture? ● 11 How does potential and kinetic energy apply to art? ● 12 What is a mobile, invented by whom? Using the information gathered from research, each group will develop a visual presentation that includes a video and a kinetic art mobile, demonstrating an understanding of the essential questions. The video product will be a 3-5 minute video presentation with cited sources in MLA format. As a class, the students will critique the presentations for further refinement. Each group will have an opportunity to present a second time using the feedback from the first presentation. Based on the information gathered through research and presentations, students will write contracts and collaboratively with their group (2-3) use fabrication equipment to create a work of kinetic art.		
Mini-PBL Driving Question	How can we as artists from the public works department of Chattanooga State, create visual representations of potential and kinetic energy, in such a way to help people attune to their surroundings?		
Hook Event	Visual presentation of large kinetic art. Students will field trip and view kinetic art on Chattanooga State's campus. Students will discuss and view other examples of kinetic art through the videos: ● Compilation of kinetic art pieces: https://www.youtube.com/watch?v=1CNU3DQclGs ● Wind powered sculptures: https://www.youtube.com/watch?v=Pj-NqWDH2qE		

Scaffolding Activities	**Class Activities** ● Socratic Seminar: A piece of kinetic art is presented to the group for critical conversations as to how and what the art reflects in society. Students will write key words and ideas from the seminar on poster paper. ● Mobile Art: Creation of a kinetic art mobile piece. This is the first part of the product. A clothes hanger will be covered and pieces of various materials such as cardboard or construction paper will be attached to the hanger with fishing line. ● Written Expression: Written contract for the group. Written explanations of how the art functions, the meaning to society, and self evaluation of performance as a group member. ● Kinetic Sculpture: Collaborative construction of a kinetic sculpture that is made from fabricated parts using the computer based machines. Team members will gather materials and assist in constructing the kinetic sculpture. **Station Activities** The student groups will use their electronic device to research and extract information and examples to answer the questions. They will create a visual for presentations. ● Station 1 - Essential questions 1, 2, 3, 4 ○ 1 What is movement? ○ 2 What is balance? ○ 3 What is positive space? ○ 4 What is negative space? ● Station 2 - Essential questions 5, 6, 7, 8 ○ 5 What is energy? ○ 6 What is kinetic energy? ○ 7 What is potential energy? ○ 8 What is mechanical energy? ● Station 3 - Essential questions 9, 10, 11 ○ 9 What is kinetic art? ○ 10 What is kinetic sculpture? ○ 11 How does potential and kinetic energy apply to art? ● Station 4 - Essential question 12 and create a kinetic art mobile. ○ 12 What is a mobile, invented by whom? ● Station 5 - Summarize information into a visual presentation **Workshops** ● Carvey: The Carvey is a desktop CNC router that cuts small pieces of MDF. Here students will learn how to use the Carvey machine to design and cut MDF pieces of material for their kinetic art. ● Vinyl Cutter: A vinyl cutter is a type of computer-controlled machine. Like a printer controls a nozzle, the computer controls the movement of a sharp blade over the surface of the material. This blade is used to cut out shapes and letters from sheets of thin self-adhesive plastic (vinyl). Here students will learn to use the vinyl cutter. ● Poster Maker: A computer based machine that allows for the quick and easy creation of full color posters. Here students will learn to use the poster maker. **Focus Groups** ● Focus groups will be used for students who are not showing proficiency on the digital fabrication tools: Carvey, Vinyl Cutter and Poster Maker. Teacher will determine who attends these groups through formative assessment and talking to each group. **Mini-PBL Teams** ● Mini-PBL teams will be 2-3 students assigned by teacher. ● Student teams will make a contract that will delineate the individual duties of each team member. **Digital Resources** ● Chromebook

Calendar Overview

Monday	Tuesday	Wednesday	Thursday	Friday
Hook Event CA: Socratic Seminar	SA: Stations 1,2,3	SA: Stations 1,2,3	SA: Stations 1,2,3	SA: Stations-4,5
SA: Stations 1-5	SA: Stations 1-5 WK: Carvey	CA: Written Expression WK: Vinyl Cutter	CA: Mobile Art WK: Poster maker	CA: Kinetic Sculpture
CA: Kinetic Sculpture Focus Groups	CA: Kinetic Sculpture Focus Groups	CA: Kinetic Sculpture CA: Written Expression	CA: Kinetic Sculpture Focus Groups	CA: Written Expression

Culminating Event

Product

- The product is a 3-5 minute video.
- The product is a kinetic art mobile that is aesthetically pleasing.
- The product is a work of kinetic art with a minimum size of 24" x 24" that includes some type of fabrication.
- Students are able to use the carvey, vinyl cutter, or poster maker.

Showcase

- The kinetic art will be displayed for parents and community to view in the student gallery at Chattanooga State Community College.

Common Assessment

STEM SCIENCE TECHNOLOGY ENGINEERING MATH

Mini-PBL Rubric

	Advanced	Proficient
LT 4 Connect - Synthesizing knowledge and personal experiences to relate ideas to social, cultural and historical context	❏ Create a Kinetic Art Mobile that is visually pleasing and well balanced with an explanation as to how it functions. ❏ Synthesize using the research information gathered and personal experiences to create a Kinetic sculpture ❏ Moves without human interaction ❏ Explanation as to how it functions	❏ Video 3-5 mins ❏ Participate in the socratic seminar and synthesize by making connections between art and other life experiences ❏ Present the research findings with a digital piece that has examples to support the information ❏ Draw design for kinetic sculpture ❏ Create a kinetic sculpture ❏ Balanced ❏ Aesthetically pleasing ❏ Movable parts ❏ Self-evaluation form ❏ Brief explanation of what is represented and how energy is used in the project.
COLLABORATION	❏ All team members are engaging in further research that could include researching online, peer feedback, and/or seeking teacher feedback	❏ Each student will develop an idea and together the team members will decide on which to use for the mobile. ❏ Both team members participate in cutting and constructing the mobile. ❏ Team members are discussing further development of their product.
CREATIVITY	❏ Product incorporates multiple elements that were not included in the initial requirements	❏ Product is beyond the model provided

Minimum Requirement Components: Must be included to be graded	❏ Video 3-5mins ❏ Self evaluation form completed ❏ Photograph of final project submitted to google classroom with partner's name included ❏ Label your work with name and title	
Grades	• If the Mini-PBL work is all advanced according to the rubric criteria above, the grade is a 100. • If the work meets all the proficient criteria and not all of the advanced criteria, the grade is an 85. • If the work does not meet all of the proficient criteria, the grade is a 50. • If the grade does not meet the minimum requirements, the grade is a 0.	

Vocabulary

Art	1. Aesthetics, Balance, Movement, Mobile, Kinetic Art, Positive space, Negative Space, In-The-Round, Three Dimensional, Repetition, Organic, Line, Sequential Movement, Optical Movement, Kinetic Movement 2. Energy, Potential Energy, Kinetic Energy, Mechanical Energy