

Project STEAM 2014
High Tech High North County Arts Department
Common Core Aligned Lesson Plan/s

Subject/s: Visual Art, Engineering, Multimedia, Industrial Art

Grade/s: 10, 11, 12 with integration of grades K-5

Project overview:

Project STEAM 2014

High Tech High North County Arts Department

High Tech High Goes Green

As a team, we are working to develop a cross curricular, collaborative project involving the creation and implementation of a working organic farm/garden at our school. This project will incorporate all of the students in 10-12 grade here at High Tech High North County. High Tech High North County is a public charter school in San Diego County. We are a project-based learning school that values cross-curricular and integrated project work. This project is particularly unique in that all of the Exploratory classes are involved. As a result, all upperclassmen and women will be involved in the production of the project. The project is designed to benefit our entire village of K-12 students, teachers and our surrounding community.

This project will be a “rigorous, systematic and programmatic integration” of our Engineering, Multimedia, Visual and Industrial Art Classes. The garden will include a full aquaponics system, and fully organic farming plots to be used by both the High School and Elementary students to study biology, environmental engineering, art, and multimedia. The garden will also be esthetically thoughtful including wall and garden art. All classes will work together to develop a community farmers market on site or in a local space. Although teachers are working to develop an inclusive STEAM curriculum, it is our belief that giving students the opportunity to help develop the curriculum creates student buy in for the work. Students will be required to help develop rubrics, brainstorm exhibition ideas and determine how the work will contain a real world and community connection.

Learning Target/s:

Students will develop an understanding of the native biology and ecology of Southern California with an emphasis on sustainability and real world problem solving with regards to the environment and food production.

Students will create multimedia and art installations in order to convey their understanding and exhibit their learning to peers, elementary students, and the community at large. These may

take the form of video and multimedia installations, art workshops with students learning plein air painting and drawing techniques. Graphic design of brochures and information on the plants and food systems in the garden.

Students will learn to design and fabricate a sustainable garden using the principles of permaculture. This will include the design of all structures within the garden.

Students will develop working budgets and cost benefit analysis of the food produced for a bi-monthly farmers market.

Relevance/Rationale:

The reason for this project is multi-faceted. We are interested in building community, spreading awareness about organic agriculture and healthy eating, and the value of working as a team (in the dirt) to produce a life-sustaining product: our own food. We believe in the power of collective labor, as well as sharing organic food, to build community. Our current lunch program poses several issues: processed and packaged food, trash, and segregation between staff and students. We believe that gathering as a community to produce an edible schoolyard will bring us together both in the labor and sharing phases. Students will surely recognize the relevance of this project to their own lives in that they of course must eat, and they will find that ownership of their own sustenance and management of the garden space, from beginning to completion, is *their* responsibility. They will design the space, decorate and market the garden, and ensure its longevity. Through careful examination of agriculture practices, both the detriments of processed food and health benefits of organic food, and the socio-demographic relationship between food shortage, overpopulation, and distribution, students will learn how this project is going to become the future of food production: one that is community-based.

Standards:

1. Common Core Alignment

Integration of Knowledge and Ideas

7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

College and Career readiness anchor Standards for Writing

*Text Types and Purposes**

1. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

Production and distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

2. VAPA Standards for Visual Art and Multimedia

ARTISTIC PERCEPTION

1.1 Identify and use the principles of design to discuss, analyze, and write about visual aspects in the environment and in works of art, including their own.

1.2 Describe the principles of design as used in works of art, focusing on dominance and subordination.

Analyze Art Elements and Principles of Design

1.3 Research and analyze the work of an artist and write about the artist's distinctive style and its contribution to the meaning of the work.

1.4 Analyze and describe how the composition of a work of art is affected by the use of a particular principle of design.

CREATIVE EXPRESSION

2.1 Solve a visual arts problem that involves the effective use of the elements of art and the principles of design.

2.2 Prepare a portfolio of original two- and three-dimensional works of art that reflects refined craftsmanship and technical skills.

2.3 Develop and refine skill in the manipulation of digital imagery (either still or video).

2.4 Review and refine observational drawing skills.

Communication and Expression Through Original Works of Art

2.5 Create an expressive composition, focusing on dominance and subordination.

2.6 Create a two- or three-dimensional work of art that addresses a social issue.

HISTORICAL AND CULTURAL CONTEXT

Diversity of the Visual Arts

3.3 Identify and describe trends in the visual arts and discuss how the issues of time, place, and cultural influence are reflected in selected works of art.

AESTHETIC VALUING

4.2 Compare the ways in which the meaning of a specific work of art has been affected over time because of changes in interpretation and context.

Make Informed Judgments

4.3 Formulate and support a position regarding the aesthetic value of a specific work of art and change or defend that position after considering the views of others.

4.4 Articulate the process and rationale for refining and reworking one of their own works of art.

4.5 Employ the conventions of art criticism in writing and speaking about works of art.

CONNECTIONS, RELATIONSHIPS, APPLICATIONS

5.1 Design an advertising campaign for a theatre or dance production held at a school, creating images that represent characters and major events in the production. *Note we will be creating advertisements for our community garden not theatre or dance).

Careers and Career-Related Skills

5.4 Demonstrate an understanding of the various skills of an artist, art critic, art historian, art collector, art gallery owner, and philosopher of art (aesthetician).

Formative Assessment/Criteria for Success:

A variety of assessments will be used to measure student outcomes

- Systematic daily observation
- A student-designed rubric for looking at student work during critique
- Critique feedback
- Goal setting and revision goals
- Drafting
- A rubric designed to look at high quality project work based on the criteria developed by the teacher
- Exam
- Lab Practical
- Shop Safety Workshops/Quizzes
- Final exhibition of work

For a specific to Arts/Engineering **SAMPLE RUBRIC** see attached document.

Visual Art *Subject to change		
Time Frame	Description	Materials
Semester One	In this class, students will focus on the fundamentals of the elements and principles of art. They will be introduced to artists, both current and historical that relate to the project. Various Plein Air and nature art will be introduced in addition to impressionist, expressionist and cubist artists. Students will also be involved in the esthetics of the development of the garden. They will help create succulent wall art gardens and other art pieces for the garden (subject to student choice).	-Drawing and Painting materials -Cameras -Computers and photo editing capabilities -Wood -Planting materials -Easels
Semester Two	The second semester will focus on drawing and	*see above

	<p>painting, both observational and abstract. In the second semester, students will have various aesthetic and artistic choices to make.</p>	
<p>Elective Plan for Visual Art:</p> <ul style="list-style-type: none"> • Quarter 1 & 2 → Outdoor Art: In Outdoor Art students will look at artists like Andy Goldsworthy and create works of art in the garden that is being developed in Industrial Art. Students and teachers of both classes will work together to develop those projects. • Quarter 3 & 4 → Plein Air Drawing and Painting: Students will work outside on site to create nature drawing and paintings. Art pieces will be shown at public exhibitions and farmers markets. 		

Industrial Art		
Time Frame	Description	Materials
Semester One	<p>Students will learn and understand the job requirements of a landscape architect, including understanding how space impacts human activity, and understanding of the local environment and environment as a whole by working with each other, the instructor, and outside experts. Students will design the optimal layout and planting of the space</p>	<p>Large scale printing for design boards and presentation Drawing Tablets for design teams to use industry standard design tools (CAD software etc Woodworking and Metal Tools to construct vital structures for outdoor spaces within the project Various texts on landscape design, native planting etc.</p>
Semester Two	<p>Students will learn to use rendering skills both digitally and analog as well as understand scale drawings. Students will develop working budgets and awareness of upkeep costs Students will design and help build a strategically designed working/teaching garden space on site.</p>	<p>Illustration markers and media resources for support in drawing with markers for design language. Drafting Vellums/Drawing Papers Drawing Tablets for design teams to use industry standard design tools (CAD software etc</p>
<p>Elective Plan: Garden School X Block Class for maintenance and seasonal planting of site. Semester 1: Summer Planting, and workshop with local experts. Study sustainable farming</p>		

Semester 2: Fall/Winter Planting, and workshop with local experts. Study Permaculture

Multimedia

Time Frame	Description	Materials
Semester One	Students will study the efficacy of media related to non-profit community projects and organizations. How do we “get the word out” using print, video, and web design, to begin to spread awareness and engender involvement. Students will study and create posters, ads, a website, and create a documentary that examines the need for and benefits of a community garden.	Printing, camera and video equipment, website hosting fees.
Semester Two	Students will continue production of the documentary, focusing more on the actual construction, planting, harvesting, and transforming the food program at our school. In addition, students will photo-document progress, and design signage for the actual garden that relates to what is being grown there. We will also further develop and maintain the website.	Materials for signage, post-production costs for the documentary film (color correction and sound mixing), website hosting fees.

Elective Plan: Seminar on Documentary Film and the “sizzle reel” for marketing purposes. We will examine and create short documentaries for local non-profits to help them turn their mission into action. Students will learn elements of documentary formulae including the use of A-roll and B-roll footage, proper interview technique, and camera, sound, and light techniques.

Engineering		
Time Frame	Description	Materials
Semester One	Students will design and fabricate an outdoor space that implements specific tool use involving welding, machining, plasma/torch cutting, brazing, and metal bending.	Plasma cutter, 2 rolls of 20 pound MIG welder spool Various pieces of scrap metal (round tubing, square tubing, and sheet metal)
Semester Two	Students will design and implement a full solar energy set-up for use with aquaponics equipment.	Solar cells, wires, batteries and inverters.

Elective Plan: To integrate design, engineering and environmental science to convert an open space to use 100% solar energy.

Community Connections:

Spencer Nelson: Outdoor education

Matt Leader: Biology Instructor

Amy Hite: Garden Hammer

Andrew Marshall: Education Director, Maine Organic Farmers & Gardeners Assoc.

Emerald Village Garden Program

Timothy Barrett: Landscape Architect

Resources:

[The Edible Schoolyard](#) (website)

[Savannah's Organic Ranch](#) (website)

[Edible Plants of California Coastal Region](#)

[California Native Landscaping](#)

[Organic Farming and Permaculture](#)

[Andy Goldsworthy: A Collaboration with Nature](#)

[Andy Goldsworthy: TIME](#)

Access for All:

- *Each of us run an X block incorporating aspects of the project next year*
- *All inclusive classrooms*

Modifications/Accommodations:

As a fully inclusive school all of our classes are designed to allow for the success of all of our students, including students who have individual education plans (IEP) and our students for whom English is a second language. Each class and each project is entirely scaleable to meet the needs of all of our students abilities. This is achieved with collaboration between the teachers, students, our full time inclusion faculty, and academic coaches. Together we are able to find access points and achievable outcomes for any student.