## High School - New Course Descriptions

## Humanities Preserving our Heritage with Technology

Year long course (Social studies and technology credit) offered to grades 11& 12. In this year-long course, students will gain a deeper understanding of specific historic events while preserving the sites associated with these events using advanced digital scanning technologies. The primary focus of this course will be a project-based curriculum that encourages students to synthesize Social Studies with Technology. Students will work with community-based clients and historical societies to create exact digital models of historic sites while understanding the Social Studies concepts associated with them. Students will be responsible for presenting their work and findings to authentic audiences using public speaking and interpersonal skills. Through a partnership with the Cyber Archive organization (cyark.org), students will become proficient in the digital scanning technologies and will contribute scans of selected sites to the official CyArk database. This interdisciplinary course satisfies both Social Studies and Technology standards and credits for graduation.

### Literary connections to the 21st century

Semester course offered both semesters to grades 11 & 12: double period block. Language Arts (literature) & Social Studies credit

This interdisciplinary course will combine the literary elements of a language arts class with the historical relevance of a history course. Students will make authentic connections to 21st century issues by analyzing social, political, and economic themes throughout literature. These will be applied to current topics and utilize a project-based format to make real world connections. Possible topics include: global warming, human trafficking, child labor, overpopulation, homelessness, and rights to water. One topic will be covered each semester on a rotating basis.

# Technology

### **Innovative Design Technology**

Year-Long Course

Offered to students in grades 11-12

This course meets a laboratory science graduation requirement. Can count as 3rd lab science in place of Physics or Chemistry.

This course introduces the design cycle model-a fundamental concept underpinning the design process and central to a learner's understanding of design activities. Each element of the design cycle represents how designers progress through the design process to refine the design solution in increasing detail. You will analyze and understand the strengths and limitations of designed prototypes and apply modifications, thereby participating in an iterative engineering design process. The topic then moves on to focus on the strategies that designers use to arrive at solutions to problems and the varied nature of the skills and knowledge they need to carry out their activities successfully. Hands-on topics will include, but will not be limited to; Design Process, Product Innovation, Green Design, Materials, Product Development, Product Design, Evaluation, Energy, Structures, Mechanical Design, and Sustainable Development. Using various 3D technologies and exploring several 3D modeling software packages you will turn your ideas into real products with cutting edge 3D printers and scanners. The course assumes no prior knowledge in design or technology. "Be prepared for lots of hands-on modeling, construction and building!"

## Article published on Edutopia

## From Modern Farm to Sustainable Table: Teaching STEM and Humanities with Authenticity

## By Heather Calabro and Gregg Kaneko

UNE" 2014



The "Advenure Thyme" team's beautiful heads of lettuce at their first harvest. Photo credit: Heather Calabro and Gregg Kaneko

Everyone knows that the attention span of a 14-year-old can be short, but we intended to create a year-long project for our freshmen course. How on earth were we going to sustain engagement among our students on one project from August to May?

At Mid-Pacific Institute in Honolulu, we teach MPX, a completely project-based curriculum that fulfills the ninth grade requirements for biology, mathematics, social studies, and language arts. The MPX curriculum needs to be as rigorous as it is innovative, so we spent the summer planning out the details for a challenging, interdisciplinary, yearlong project that would center around the concepts of sustainability and food security.

Our project would require students to work in teams:

- Designing high-density garden systems
- Constructing the garden systems
- Participating in culinary lessons
- Cultivating crops
- Competing in a cook-offusing the crops

#### A Firsthand View of Sustainability

The key to keeping our students engaged in this project work was beginning the process with field trips to help them understand the need for sustainable practices. Some of the essential questions embedded in this exploration were:

- Where does our food come from? And where does it go?
- What is sustainable farming?
- What are the similarities and differences between ancient and modem farming methods?

We toured a waste-to-power plant and a recycling plant so that the students could see the amount of waste our community generates and how it is processed in order to lessen the burden on our environment. We were able to assess that the field trips were well worth it through the students' reflective blog posts written as part of their homework. One student posted:

Going to H-Power was undeniably one of the most educatingfield trips I have ever taken. I never really grasped how much our community conserves, but during the field trip, I was given an idea, as for every ten garbage trucks that enter the plant, only one leaves full of ash.

Then, we toured a *lo'i*, an ancient (and still completely sustainable) Hawaiian way of farming the taro plant.

As the students began to collect research regarding high-density gardening techniques, we took two more field trips to let them ask questions for modem farming experts, like "What is an air pump?" and "How much money does this type of farming cost to maintain?" The first destination was an aquaponics farm, where the students observed high-density farming at the commercial level. The second was a tour of soil and soil-less gardens at the local university.

Through these field trips, the students became concerned for their community and invested in the theme of this project.



*One of the student groups' architectural sketches of the hydroponic garden systems.* Photo Credit: Heather Calabro & Gregg Kaneko

### Hydroponics in Action

Each of our seven freshmen teams then designed their own high-density garden system. Every team reached the same decision, to pursue hydroponic gardening. The student teams revised their designs many times before we approved them to move forward with construction. Students applied geometry and scale factor in creating scale drawings of their hydroponic systems.



MPX9 student Hooper LeBlanc and teacher Gregg Kaneko working on the "Bambucha Boys" tean1's garden system. Photo Credit: Heather Calabro & amp; Gregg Kaneko

To keep the process authentic, we required the students to adhere to a budget and to price out materials for their garden system. Then, we took all30 freshmen on a field trip to Home Depot. There, the students spent the morning finding building materials, budgeting, and making on-the-fly decisions regarding selecting and altering materials.

The seven teams then spent the rest of the semester constructing their garden designs. It was not easy! There were mismeasurements, leaks, and creative repairs, but every team successfully completed a working hydroponic garden, designed to fit in a very small yard or on a lanai/deck space.

Each team was given the choice of what to grow in their constructed garden system. The students spent the majority of the second semester cultivating their crops. They grew green beans, cucumbers, tomatoes, lettuce, spinach, and a variety of herbs. The students spent a great deal of time learning how to balance the nutrients and pH levels in their soil-less garden systems. Nearly every day, they would visit their gardens to conduct readings of the water in their systems, balance pH and TDS levels, and prune their plants.

#### Freshmen Iron Chefs!

Meanwhile, we were able to partner with the culinary department at a local community college. The students tutored under an instructor chef in the training kitchen one day per month from November to February. In between each culinary lesson, we assigned "cooking homework," including blog posts about students' experiences in both the training kitchen and their homes. One student wrote:

I definitely see improvement from my first cooking experience, however I did get ahead of myself again. For example, I started boiling the water before I even had all of my ingredients gathered! Planning better is something I need to work on next time.



*Student Bailey Lum pan-fiying some vegetables.* Photo Credit: Heather Calabro & Credit: Gregg Kaneko

Through these culinary lessons, the freshmen learned a multitude of real-life skills including safety, sanitation, heating techniques, and flavoring. The science behind food preparation, such as emulsification, dovetailed nicely into the curriculum.

The culminating event for this project was a public exhibition and competition. Each team created a display that included posters with their learning points on sustainability, binders that included their garden system's manual and maintenance log, and video documentaries of their team's project process. (See the example below.) Each team also competed in the "MPiron Chef" cook-off, using the vegetables they grew in their garden systems. The students had one hour to prepare their dishes before they presented them to a panel of judges including an executive chef and a local food critic. The students had to speak to the judges, as well as an auditorium full of

parents and community members, about their garden system, recipe, and experience in the kitchen that evening. It was meaningful for the students to explain their decisions both in the garden and in the kitchen.

On so many different levels, we saw our freshmen grow during this project, just as much as their vegetables! As one of our students reflected:

I can't say how fortunate I was to be able to be a part of this incredible experience. I feel myself swell up with pride at the accomplishments of not only myself or my group, but our class as a whole.

For the full documentation of this project, visit the And please share your own adventures with teaching sustainability through PBL in the comments section below.

## 3-2-1 Kathy /Kulaiwi

## Name of Routine: 3 - 2 - 1 Bridge (page 86-92)

## Explain why this routine was chosen.

Our purpose was to collect a second set of baseline responses from all individuals in a written form. We chose this routine to gather students' initial thoughts as we began our Social Studies unit on Community. It followed another routine 'See, Think, Wonder'. In combination, we have strong data as to our direction the unit needs to take based on the students' responses, interests and needs.

**Briefly describe what you did.** Two home groups (Ka Moana and Ka 'Aina meet together to quickly set the expectations for the routine. Prior to the meeting, Lia had designed a page outlining the prompts (**3** words that come to mind when you think of *Community*, **2** questions you have about *community* and **1** metaphor that describes *community*.) I briefly reviewed our prior ohana discussion using the first routine and our journey to Pu'u Ualaka'a Park. The term metaphor was defined using the dictionary along with the example: "Kulaiwi is like a family".

Students were asked to express their own thinking in writing working individually in response to the 3 written prompts.

## Provide Evidences. (Photos, videos, student work)

Hard copies of student work are held in unit folders with select excerpts quoted in section below.

## **Reflection in terms of children's responses and learning.**

### Here is a sample highlight of a few responses, consolidated:

**Responses from 3 words:** Togetherness, buildings, people, helpers, laulima, family, ohana, harmony, changing, manmade things, work, world, places.

## **Responses from 2 questions:**

Why do we have a government? (Nate) Does there have to be people? (Jackson) How does the community fit together like a puzzle? (Macie) What will our island look like in a century or two? (Lily E.) How can cities help each other? (Nalani) How long did it take to build one? (Rian)

## Reponses to 1 metaphor:

Communities can be like chop suey. (Ari) Communities are like gears because they all work together to make the machine of O'ahu. (Cameron)

A community is like a building with bricks and foundations. (Alex P.)

The routine helped us in the assessment of a baseline for our beginning planning stages for unit design for the class as a whole and capturing individual's thinking.

## What worked well, what didn't...

Worked well:

The listing of the 3 words started them off with a brief jumpstart and a feeling of accomplishment.

Emphasizing the idea of <u>association</u> gave the kids a feeling of success - we encouraged quick wonderings that come to them immediately without much filtering on their part. Initial ideas jotted down in the form of questions for the second part. <u>Didn't work as well:</u>

The term 'metaphor' caused confusion for a few students. Defining/using/playing with this term might have yielded greater associations. Using similes and analogies as terms/examples could broaden the exercise and the thinking.

## Suggestions for improvement:

1. I plan to re-offer this same 3-2-1 written format following our unit experiences, explorations and lessons in order to measure the thinking growth/changes/ developments related to the huge concept of community. It could also be offered orally in a discussion session.

2. A follow-up meeting might have been beneficial to collect the 3 words, consolidating them visually for students to see the common terms and variety of thought. 3-2-1 is designed for these words to be set aside, but it could be used as a group process eye-opener too, immediately following the written expressions.

## Other ways/contexts this routine might be helpful:

Prior knowledge is what's captured from this routine and could be used effectively in many ways.

**(Optional) Students' reflection to the routine:** Our students who gravitate to written expression as a preferred mode welcomed this routine. The quickness and abbreviated responses also invited thinking investment with a reassurance that it could be brief.

## Generate-Sort-Connect-Extend ---Sarah-- Ka`Imi Loa

### Name of Routine: Generate-Sort-Connect-Extend: Concept Maps (p. 125)

### Kukuna Ka`lmi Loa

### Explain why this routine was chosen.

My teammates and I wanted to use this routine to assess what the children remembered about the elements (songs, games, colors, symbols, foods) of the celebrations that we have learned about. We wanted to also see how the children would make connections between the objects and among various Celebrations.

### Briefly describe what you did.

Similar to what AI and Maile did with this routine, we will have objects from various celebrations (a stocking, ornament, photo of baobab tree, kimono, Chinese clothing, kagami mochi, tea cup, birthday crown, cookie tree, birthday crepe, dreidel, valentine, etc.). We will play a game where children form 2 different groups sitting across from each other on the carpet. We will give a child an object to place into a category with a partner. We will give points for each object and tally them on chart paper. They will tell what celebration the object is from, why it's in that particular category and anything else they know about it (3 points total). We will pair the children beforehand to ensure mixed grouping and ability. I like how AI and Maile used yarn to make connections among several categories so we will have that available to the children as well.

### **Provide Evidence**



We start with a stocking as an example and call on the children to practice playing the game Student: The color is red. Now you can connect the stocking to color as well.

Student: What if you have something that connects to all the things? You would have to use a lot of string.

Student: The stocking can also go in gifts because you can give it as a gift.

What do we need to remember?

Student: Remember the agreements.

Student: Stay in control of your body and voice.

Student: You need to remember to not like if you get something from the bag you can't argue like if someone got it and the other person sits down and grabs it from you.

Student: Remember the rules.

Birthday Crown

Student: I think it's a symbol.

Student: I think its clothing because you wear it like a headband.

Student: Birthdays are a big celebration. You celebrate the day you were born.

Present/Gift

Student: It's a symbol and a gift because you can give it for Christmas. Student: And colors because red and green is Christmas colors.

Student: Every Christmas you give and get gifts.

Chinese Lion

Student: Chinese New Year. It's a lion.

Student: It goes in symbols.

Student: I'm thinking its symbols.

Student: Clothing because you can wear it. Student: It scares away the bad spirits.

Martin Luther King Jr. Book

Student: I think it goes in stories. It's for MLK Jr. Day. Basically it's a symbol too.

Student: MLK Jr. he's a symbol of freedom and peace.

Student: It's for Japanese New Year.

Student: It goes in food because you put ozoni in it and mochi.

Student: The mochi is so your family sticks together.

#### **Reflection in terms of children's responses and learning.**

Carla and I thought that this routine was a great way to assess children's learning about the elements of Celebrations from our unit, to see the connections among their ideas and for them to explain their thinking (making it more visible!) Children responded very positively to the game (thought it was fun) and seemed to understand what we were asking them to do. One modification I made during the game was for each pair to be allowed to call on their teammates to help them share more about the celebration of topic. This allowed for more children to share ideas and for the pair to receive their points, seemed to make it safer for them. It was clear which children really remembered the celebrations we learned about and which ones needed support from their partner/group to justify why a certain item went in it's respective category.

#### The routine helped us in the assessment of:

What children remembered about the elements of celebrations, why each particular symbol is important, and why they see connections among the different categories/Celebrations. For example, at first one student placed a dreidel in symbol category, then another student said she thought we needed a piece of string to connect it to the food category, because you get food coins when you win (another child who's family shared about Chanukah, got extremely excited and added that they are "chocolate coins!" A student remembered the word for the coins, "gelt." A student thought it was also a toy, so we created a new category called "Toys/Games." The children worked together to remember what we had learned and stretched their thinking to create a new category.

### What worked well, what didn't

We thought most elements of the game worked well. One thing we did was ask the children what they thought we needed to remember for the game to work. They came up with great ideas, such as "remember the agreements," "be in control of your body and voice," and "don't shout out answers if you know it." That was a great way to set the tone because throughout the game the children were very respectful of each other. Carla and I were proud of how calmly they played the game and how they spontaneously clapped for each round of partners! They seemed genuinely excited for each group of partners that picked an item out of the bag.

### Suggestions for improvement:

Timing wise it worked out because the children probably could not have sat for any longer, and most were engaged throughout. Perhaps doing the lesson in the morning would have worked out better for "fresh energy" from the children and less ambient noise from the outside environment (which was really distracting at times). I think it was good that we did this with the whole group as it was the first time playing it, but as the children get used to the game, it would be interesting to see how it would be different if we played in smaller groups of 13 children instead of 25.

### Other ways/contexts this routine might be helpful:

I think this routine would be helpful for learning/remembering/connecting in the middle of the unit, as well as towards the end. I can see us using this game with any of our units. For example, with our Health unit we could take different objects (model of skeletal system, stethoscope, healthy eating plate, heart model, etc.) and use these items to play.

### Students' reflection to the routine

As we were leaving the Classroom at the end of the game, one student said: "That was fun! Can we play that again?!"

## 21<sup>st</sup> Century Renaissance Expo – January 22, 2014 World History Grade 9 Mrs. Bowers

### **Project Overview**

History tends to repeat itself. The Renaissance of the 16<sup>th</sup> century reflected changes in attitude, beliefs, values, lifestyles and behaviors. We will consider how the spirit of the Renaissance brought about change. We are going to explore the concepts attributed to the Renaissance and compare them to our current society and apply the following questions: How are you a Renaissance woman? How is the spirit of the Renaissance shown today?

### Requirements (What you'll do!)

- Work in groups of four.
- Research a topic of your choice in the categories of entertainment, science and technology or society-at-large.
- Create a proposal of your topic.
- Find an adult mentor in your related topic and work with them at least 3 times to prepare your final presentation/research/etc.
- Develop a works cited (minimum 4 varied sources: book, website, periodical and adult mentor).
- Select an appropriate attire for your presentation (e.g. business attire for legislators).
- Design a booth for your exhibit.
- Complete self and group evaluations.

### **Final Product**

Your final product will be to create an exhibit on your topic and present your final project. You
will do an oral presentation (e.g. sales pitch, song, demonstration of invention, persuasive
speech). As people walk by, you will share your "product" and how it reflects the Renaissance
ideals.

All written work must be reviewed and revised:

- all presentation board material
- works cited
- written speeches (including drafts)

Grading – we will review the rubric in class and it will be posted on Edline – both individual and team reflections will be included.