

Project Based Learning At HTH

These projects are examples of the work that is done at all of the High Tech High Schools. It is our record of what we have done and how to get there. Teachers can utilize this to show off what they have done with their students, and get ideas from others teachers. Students can show their parents and friends the work that they have done, and the community can see how project based learning enables students to do and learn. Please enjoy the projects and videos.

Projects and Practices

1. A Midsummer Nights Dream

Essential Question(s):

If I perform a live theatre production of Shakspeares A midsummer Nights Dream will it help me with my oratory skills and presentation skills in my core classes?

Short Description:

Students will perform, direct and stage manage a production of William Shakespeares A Midsummer Nights Dream. Each class will be responsible for producing one of the five acts in the play. When done rehearsing, students will perform the play in its entirety for their grade level that will critique them. The conclusion or exhibition of this effort will be a live play for the school community.

Grade Level: 7th, Middle School

Subject: Drama

Examples of Student Work



Students rehearse A Midsummer Nights Dream

2. Aboriginal Art

Middle school students studied the Aboriginal Art form, including non-naturalistic abstract designs and naturalistic paintings of human, plant and animal figures. They then selected a wild animal they felt represented their personality, wrote an artist statement about the qualities they shared with their animal, and created an animal self-portrait using the traditional dotting technique and abstract design elements used by aborigines.

Teacher Reflection

Australian Aboriginal art is the oldest living art tradition in the world, with paintings in rock shelters dating back 20,000 years. This art incorporates the use of concentric circles, “u” shapes, and lines with earth tones from substances collected from the natural world. I introduced the project early in the year, and it was a good way to get to know my students. Every single piece was amazing—even students who struggle with art produced careful, thoughtful work that they were proud of. Fifteen of the pieces are now hanging at the Encinitas Health Clinic, where they have drawn rave reviews from physicians, patients, and visitors. I’m happy with the results, but next time I’ll introduce critique earlier in the drafting process, using models from this class to initiate conversations about what qualities are present in beautiful work.

Student Reflection

Creating my painting using the traditional aboriginal technique was incredibly soothing. I considered it to be yoga for my mind. I enjoyed creating my dot painting because it was a meaningful way to express myself. The animal that I chose to represent my personality was the African Pygmy-kingfisher. I chose a colorful bird because it allowed me to play around with a variety of colors. I also chose this bird because it has a long beak for going after its prey and this represents how I go after what I want. Aboriginal art tells a story, so I decided to incorporate a narrative in my painting. In my work the bird is perched in a tree in the African desert, daydreaming about rain. I am pleased with my final piece. I enjoyed learning a new technique and look forward to incorporating it into my artwork in the future.



Artwork by Bethany Shedrick, High Tech Middle, 8th grade

3. Actually, it is Rocket Science

This is a fully integrated project, which means it will incorporate both math and science. You will still have nightly homework, and you will still keep your weekly math practice journals, but the math you are working on has been tailored to this project.

Essential Question(s):

What is Motion and how to we create and control it?

How is the science of rockets the science of your every day world?

Short Description:

Working in teams, you will design and build rockets powered by water and pressurized air. Using what you learn about the fundamentals of force and motion, you will design and build a fully functional rocket including: payload compartment, propulsion system, recovery system and guidance system. These words may look foreign to you now, but soon you will know them as well as any rocket scientist!

Grade Level: 8th, Middle School

Subject: Math, Science

Project Assessment

All students will be responsible for understanding the science behind rockets. □

This knowledge will be assessed in several ways including:

25 % Rocket Design, Creation and Performance

25 % Two Written Assessments

25 % Final Presentation and Manual

25 % Group Participation and Time Management

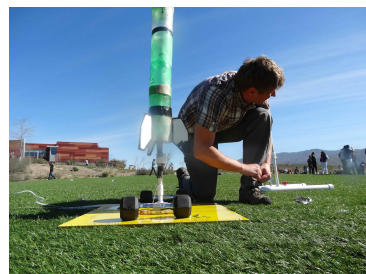
Extra Credit – Talking about the project with your family

The final products are:

The Rocket

Rocket Manual

Rocket Scientists' Presentation



4. Body Language Intersession

Essential Question(s):

How do we combat the negative messages we receive from mass media culture and create a healthy self-image and high self-esteem?

Short Description:

The content of this intersession confronted the powerful media culture that inspires low self-esteem, eating disorders, and frustration among middle school girls. The project was aimed at bolstering self-esteem and creating a positive self image through art and dance. The girls ranged from seventh to eighth grade.

Grade Level: Middle School

Subject: Art

Products and Deliverables

The choreographers we worked with brought the themes of our workshops to life through creative movement. On the last day of Intersession the girls performed the three dances they learned in front of the entire school.



5. BraceLEDs (a modified Instructable)

Essential Question(s):

- What is electricity and how do we control it?
- What are the components of a circuit, and what does it mean to complete a circuit?
- How can we relate the path of a circuit to our paths throughout middle school?

Short Description:

Students apply knowledge of electric circuits, engineering problem solving skills, and design thinking to create light-up bracelets. This project has been modified from the "BraceLED" project on the "Instructables" website.

Grade Level: 6th, Middle School

Subject: Engineering

Learning Goals

- Understand electrical circuits and circuit diagrams
- Study the history of the light bulb, including where technology is going
- Create our own light up bracelets (BraceLEDs) using batteries and LEDs
- Reflect on middle school thus far, and relate our middle school journey to the path traveled around an electrical circuit



6. Brevity is the Soul of Expression – Hamlet Project

Essential Question(s):

What is character?

How does an individual's choices shape his or her character?

What does an individual's choices and actions express about him or herself?

Short Description:

Students will read and perform William Shakespeare's enduring play *Hamlet* and consider the major themes and ideas presented by the Shakespearian oeuvre. Throughout the course of this project, students will parallel ideas and perceptions of choice and action from the literature with their personal interpretations and experiences. In this process students will ultimately reflect on these themes in their individual lives through the development and creation of a character analysis essay and visual representation.

Grade Level: 10th, Middle School

Subject: Humanities

Products and Deliverables

Project Final Product

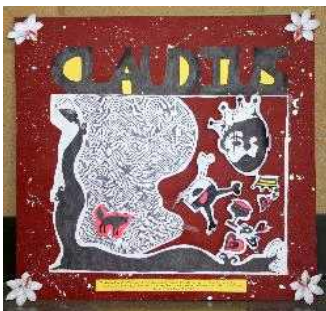
Character Analysis – Students will draft and develop a five–paragraph literary analysis focusing on one of the major characters from *Hamlet*. Students will be able to present two drafts and a final draft as a final product.

Visual Piece – Students will design and create a visual piece for one of the major characters from *Hamlet* based on the Bauhaus method of design.

Project Challenge Options

Create a Spanish telenovela of *Hamlet*

Film and edit a scene from *Hamlet* using Final Cut Pro, LiveType, and other tools and skills from Multimedia



7. Candy in a Strange Land

Introduction:

I am always trying to think of ways, beyond grades, to motivate my students to create beautiful work. For this project I used the power of models, cross grade level collaboration, and a culminating exhibition to inspire my 6th and 8th graders to work to their full potential. I am incredibly pleased with the feedback I received from my students, parents, and community members about this project. The project was fun, it provided the opportunity for students to learn important techniques, and the students' work absolutely "wowed" the audience.

Grade Level: Middle School

Subject: Art



The Photo - Example of student photo taken for project



Student Painting-Example of student's painting based on previous photo.



Lollipop by Sofia - Student photo with lollipop in background



Lollipop by Sofia (2) - Lollipop around San Diego



Cupcake - Photo of cupcake around San Diego



Final Work - A final painting

8. Carnival LEGO

Essential Question(s):

- How are simple machines and motorized mechanisms used to provide entertainment in the form of carnival rides?
- How can we create our own unique LEGO parts using scaled drawings, 3D modeling, and 3D printing?
- How can we improve our carnival rides by designing and printing unique LEGO parts?

Short Description:

Everyone loves a good carnival! In addition to the fun, adrenaline, and excitement that carnival rides bring us, they also provide a perfect example of simple machines and motorized mechanisms in action. During this project, we will combine our understanding of simple machines, motorized mechanisms, LEGO construction, 3D modeling, and engineering design thinking to create our very own LEGO Carnival!

- You will be working in groups of three or four to design and build a LEGO carnival ride
- Use the models we have constructed with the LEGO sets as an example, and build upon these designs
- You may research examples of LEGO rides online and use resources provided by Mrs. Crump
- As a Challenge Option, you may use the pneumatic add-on kit (uses air pressure)

Grade Level: 6th, Middle School

Subject: Engineering

Learning Goals

Students will know:

- How simple machines and motorized mechanisms are used in the function of carnival rides
- How to use Google SketchUp to create a scaled, 3D model

Students will understand:

- The advantages of using simple machines
- Basic construction skills using LEGOs
- 3D modeling using Google SketchUp
- 3D Printing technology



9. Case of the Cooties

Essential Question(s):

- Identify the different pathogens that cause disease?
- Investigate where certain diseases originated and how they spread.
- What can we do to stop them!

Short Description:

In groups, student investigate a particular disease or pathogen to understand both the biological and historical affects. Students also create a game or flash animation based on their particular disease.

Games can be found at www.diseasearcade.com

Grade Level: 7th, Middle School

Subject: Biology, History, Multimedia, Science

Learning Goals:

Students will show

- Detailed understanding of assigned disease
- The interaction of the disease and the human body
- The impact of the disease on a civilization
- Ability to communicate complex scientific terms and concepts
- Time management
- Bringing together individual components to create a group project
- Flash animation or game based on disease



10. Chains: A Portrait of Slavery

Essential Question(s):

- What are fundamental rights of all humans?
- How did slavery play a role in the development of American society?
- How did the ideals of freedom and liberty extend to African-Americans during the Revolutionary period and early 1800s?
- How did abolitionist movements and leaders play a role in ending legal slavery in the United States?
- How does slavery continue to impact our world today?

Short Description:

To complement our study of the Revolutionary period and our readings of *Chains* by Laurie Halse Anderson and excerpts of *Sold* by Patricia McCormick, we will study both historical and modern-day slavery. Historical topics will include the Atlantic slave trade, the Constitution and slavery, southern culture and the justification of slavery, the daily life of slaves, African American culture in the 1800s, slave resistance, and abolitionist leaders. Our study of modern-day slavery will focus on human trafficking, child labor, and the role of businesses and consumers in facilitating modern-day slavery.

Grade Level: 8th, Middle School

Subject: History, Humanities

Learning Goals:

Students will be able to:

- Develop an ability to evaluate multiple perspectives, think critically about the past, and understand the complexity of historical issues.
- Evaluate primary sources.
- Evaluate the economic and social validity of the justification of slavery.
- Understand the role of African American culture in enduring and overcoming slavery.
- Understand slave rebellion and the abolitionist movement.
- Research historical and modern-day events.



11. Civilizations Puppet Theatre

Essential Question(s):

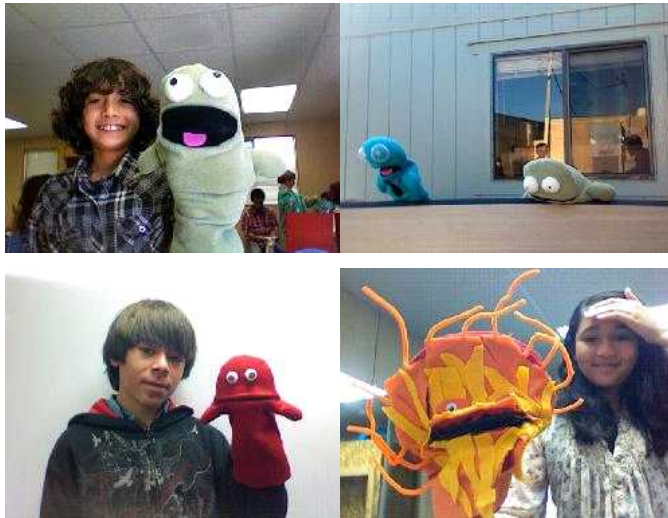
How can puppets be used to enrich and share learning?

Short Description:

Using puppets made from recycled materials students will produce a puppet show that teach about either the Aztec, Maya or Inca civilizations.

Grade Level: 7th, Middle School

Subject: Drama



12. Dirt Detectives

Essential Question(s):

How do archaeologists use artifacts to learn about the past?

Short Description:

During this project, students will learn more about their classmates' lives, discover the similarities and differences between them, and experience the complex challenges faced by archeologists when they try to learn about the past. Students will create their own personal culture bag and present it to the class, and will take notes on each other' s presentations. Then, they will secretly (at home) create a box filled with dirt and personal artifacts for other students to excavate during class. The items in the box will be related to each artifact from their personal culture bag. Students will then participate in an "archaeological dig" where they will try to use their powers of deduction and their notes from the presentations to decipher the objects found in each student' s box, just as real archaeologists use facts to learn about artifacts from the past.

Grade Level: 6th, Middle School

Subject: History, Humanities, Science

Learning Goals:

Students will know:

- Specific vocabulary related to archaeology
- Personal facts about classmates

Students will understand:

- How archaeologists work
- How to use objects as symbols
- How to make logical inferences based on known facts

Students will be able to:

- Use deduction and analysis skills
- Apply knowledge to make logical inferences
- Excavate items like a real archaeologist
- Manage project tasks and budget time accordingly



13. Do the Project Yourself, First

Short Description:

When assigning a project or assignment to students, an important step is for the teacher to do the project themselves first. By doing the project first, the teacher will find out the snags that are likely to trip up the students. They also will find out whether the project is even a good idea in the first place. The teacher will get a good sense of how long the project will take students to complete. Finally, the teacher will have a model to share with students to show an example of what they are looking for in the project.

Grade Level: K–5, Middle School, High School

Subject: Pedagogy

Teacher Reflection

Jeff Robin has been bugging me for years about his point that teachers should do the project themselves, first. In the first year of the HTH GSE School Leadership program, I thought students should write a fifteen page paper on their leadership philosophy statement. Because of Jeff, I knew I had to write my own fifteen page leadership philosophy statement. But, when I sat down to do it, I realized, "This is a horrible assignment! Who wants to write this?" So in this case, even the thought experiment of doing the project myself first saved me. I ended up modifying the assignment to make it shorter and tried to make it feel more authentic, for example, suggesting that students could write it as a cover letter when applying for a job.

Still, as the semester went along, I saw that a number of students were really struggling with the assignment. Finally, I thought, OK, I'll just write my own paper. When I brought in what I had written, a number of the students said, "Oh! I get it now!" It sure would have been better if I had done that at the beginning. So now, I really try to do my assignments first before giving them to students. This is partly because it is good practice and partly because if I don't, I know Jeff will be disappointed in me.



14. Dr. Seuss Project

Essential Question(s):

What literary and artistic elements are essential to Dr. Seuss' books?
What are their purposes?

Short Description:

Students will author and illustrate their own Seuss-inspired books.

Grade Level: Middle School

Subject: Art, Humanities, Multimedia

Detailed Description

Students experience writing (plot & theme) and illustrating (creative cartooning) their own books.

Students complete an author study of a famous author and his writings over 50 years.

Learning Goals:

Students will know:

- Dr. Seuss' life and published children's books
- Plot and theme elements in a narrative
- Anapestic Tetrameter
- Cross-hatching and shading

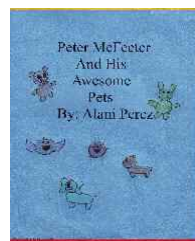
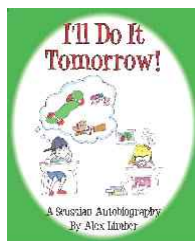
Students will understand:

Plot and theme in an originally created storyline.

Seuss-like design and original artwork.

Students will be able to:

- Write a clear plot and theme.
- Use a rhyme scheme that mimics one of Dr. Seuss' .
- Publish a book that is clean, neat, and completed with pride.



15. E is for Egypt

Essential Question(s):

How did the geography of ancient Egypt shape its culture?

What were the features of ancient Egyptian culture that made it successful?

What process does an author experience when publishing writing?

Short Description:

In this project, students will write and illustrate a children's book about ancient Egypt. After several weeks of "Egypt Exploration Days," in which they will learn about the features of ancient Egyptian civilization, they will choose one topic on which to become an expert. Then, each student will create a page for our book on their topic.

Grade Level: 6th, Middle School

Subject: Humanities

Activities

Students will be assessed on:

- various "Egyptian Exploration" activities (webquests, hieroglyphics packet, etc.)
- completion of a research guide
- their final writing piece
- evidence of careful revision and editing during the writing process
- an illustration related their topic



16. Egg Drop

Short Description:

Do you like tossing objects off the top of a roof?

Do you like watching objects come crashing onto the ground?

Do you want to learn about the relationship between distance, rate and time?

Do you want to understand acceleration due to gravity? Then do I have the project for you!

Overview:

Either with a partner, or individually, design and construct a device that will protect an egg from breaking when dropped from the top of High Tech High North County, and two other heights.

We will use the concepts of Distance, Rate, Time ($D=RT$) to calculate the velocity of our egg drop device for three heights (5', 10', and 30'). We will also use the concept of unit cancellation to convert the rate of feet per second to meters per second, miles per hour, and kilometers per hour.

Grade Level: 8th, Middle School

Subject: Physics, Science

Learning Goals:

Students will understand:

- The relationship between distance rate and time.
- How to convert units.
- Characteristics necessary to protect an egg from a large fall.



17. Engineering 101~Pop-Up Book!

Essential Question(s):

Students are responsible for investigating and answering the following essential questions:

In your own words, define what engineering is.

What are the specializations within this field of engineering and what do they involve?

Provide a minimum of 10 everyday items/things that these types of engineers work on and explain how they are involved with these items/things.

How does your field help improve our everyday lives?

What is a day in a life?

Excellency Option:

- a. Salary
- b. Education
- c. Experience
- d. Awards in the field of engineering
- e. Certifications
- f. Huge advancements/projects/designs currently being worked on

Short Description:

Intro:

Here's the rundown, 8th grade is one of the fundamental years of your education. Believe it or not, 9th grade will be here before you know it. But, before you start thinking ahead, you have an opportunity to be part of our Engineering and Design class at HTMCV, and let your creativity and design do the talking!

Project Overview:

Engineering is one the most complex, innovative, and creative applications of science and mathematics. The field of engineering studies the principles of intricate design, machines, structure, and technology. In this project you will learn about different professional fields of engineering. As young engineers, you will use your creativity, intuition, and understanding of various fields to create your very first engineering pop-up book!

Grade Level: Middle School

Subject: Engineering, Math

Learning Goals

Students will know:

How engineers work together to improve our daily lives?

How engineers use the Engineering and Design process to find a solution to a problem or question?

Students will understand:

How to use the Engineering and Design process to problem solve?

How engineers innovative new ideas?

Students will be able to:

Communicate together to create a four page pop-up book about a specific field of engineering.

Use complex paper-folding techniques to create a variety of pop-up techniques.

Make precise measurements to ensure pop-up techniques work properly.

Examples of Student Work



18. Family Math

Tapping into Home Learning

Bridging the Gap:

I've always enjoyed working closely with my students, but in recent years I've become most interested in my interactions with their parents. As a middle school teacher, I manage multiple classes and trying to find time to meet with individual families has always been challenging. However, the conversations I have with parents are insightful and informative. Parents helped me to see each student in a new light. Although I have expertise in teaching, parents are experts on their children.

A few years ago, it occurred to me that families are untapped funds of knowledge that could support student learning outside of the classroom. My idea seemed fundamental, yet foreign, because I had never looked beyond the school environment. I began to research and experiment with approaches to build communication with families and engage them as education partners. The result, Family Math, is my attempt to bridge the home and school gap.

Grade Level: Middle School

Subject: Math

Reflections on Learning

Since I began my implementation of Family Math, I have observed a high level of student participation. In comparison to the traditional packets of lengthy problem sets, Family Math has shown a noticeable increase in work completion and student attentiveness. Students are more willing to volunteer to present their solutions before classmates, and most students show interest in different strategies. Student quizzes, in-class conversations, and presentations all reveal an increase in the quality and quantity of student response.

While Family Math has yielded great results, nothing is perfect, and I continue working to improve this strategy to suit the needs of my students and their families. This year, recognizing the need to balance critical thinking with facility in completing standard mathematical operations, I incorporated a section of traditional math practice after the open-ended math problem. From parent feedback, I also recognized that the relationship between parents and students sometimes becomes tense when they are unsuccessful at solving the Family Math problem. I'm currently working to create more options and integrate more games and puzzles,

similar to the ones presented at Family Math Night. Hopefully, providing choices will encourage students and families to play or do math more frequently and remove the pressure of solving the problem.

Building bridges between school and home has required a significant investment of time, creativity, and communication. However, the dividends have been enormous. At this year's Family Math Night, for example, Manuel and his mother enjoyed working together at the various math stations, but found "The Card Problem" most engaging. Although they were unable to complete the entire problem, they promised to continue solving the problem at home. The week after Family Math Night, Manuel's mother returned with him and his younger sister to share their solution. This family's experience illustrates the interest and excitement Family Math has generated. It also provides a great example of the connections families can create with each other by sharing math learning together.

What is Family Math?

In my math classroom, I emphasize collaborative learning where students actively co-construct knowledge. Visitors are often surprised when observing my classroom because they expect to see a teacher-centered lecture with students passively taking notes. In contrast, my classroom is a dynamic community with students working together to solve real-world problems and justify their responses. As a teacher, I provide feedback and guide student learning. In the end, I want students to recognize their math skills as valuable and feel ownership over their learning.

The value of Family Math lies in its ability to promote collaborative student learning beyond the classroom. Compared to traditional, isolated homework drills, Family Math home activities build a rich, social learning experience that extends the collaborative learning done in class into the home environment. Each week students are provided with an open-ended problem of the week which can be solved in many ways. It is a wonderful learning experience for students to hear how their peers arrived at a solution. To reinforce the learning cultivated through these conversations, students teach their parents the problem of the week for homework. Parents aren't supposed to solve the problems for their children, but to act instead as inquisitive observers, asking questions that encourage students to analyze their math ideas.

An additional benefit of family math is that it provides an informal progress report for parents to understand their child's strengths, needs, and interests. To ensure that parents are included in the problem of the week homework, there's a space on the homework for them to initial and provide written feedback. In an

online survey, one parent wrote, “Home assignments alert both the child and parents what areas the child excels in and what areas require improvement and/or better understanding of the concepts involved.”

Sample Family Math Problems

Sample family math problem:

The PIN Problem: “I forgot the code! I’m ready to cry! How many arrangements do I need to try?” Ms. Morales has forgotten the code to access money from her bank account. It is a four-digit personal identification number (PIN) and luckily she remembers that it includes the numbers zero, four, eight, and nine. How many possible arrangements are there for Ms. Morales’ s PIN?

Sample parent questions:

- What do you need to find out?
- What information do you have?
- Why did you predict the answer will be 16?
- Tell me how you’ve organized your lists of PIN codes.
- Could the PIN start with zero?
- Did you check to make sure that you didn’t write any code twice?
- Can you explain how you arrived at the answer of 24?
- Do you see any patterns in your work?
- How confident are you of your answer?

19. Film Production 2.0

Introduction:

When I first started to plan a project on filmmaking, I looked for examples of student films by middle school students; I found only a few. So, I went to look at high school films. Though these included a slightly wider selection, the movies were still not what I was looking for. The sound quality was often poor, the lighting dim, and the length, too long. These same ten-minute films could be made in two minutes and basically tell the same story. I decided that I would teach my students to create one-minute movies that focused on the craft of storytelling. I figured that if I coached the students in storytelling through visuals, encouraged them to limit the use of dialogue, and we shot the movies outside, a majority of the technical problems could be solved. I was confident that my middle school students could produce stronger movies than their high school counterparts.

I was wrong. The movies my students initially created had many of the same problems as the high school examples— poor sound quality, poor lighting and poor editing. Though I had tried to teach students strategies to avoid these difficulties, it wasn't until they viewed their own films in front of an audience that they recognized their mistakes. As I watched the students view their films and respond to their audience, I realized that middle school students often learn more by making mistakes than by listening to their teacher.

Grade Level: 7th, Middle School

Subject: Humanities, Multimedia

Stepping Up

Students had made their one-minute movies in small groups of three to four. Some were good, a few were great, and most were poor, but we watched them all, critiqued them and quickly learned what could have been better. The critique revealed that simple ideas with a clear storyline were the best. We also found that having minimal dialogue made for more powerful films, with fewer opportunities for errors with sound editing. Armed with this learning, we transitioned from one-minute small group movies into making our whole class film.

I made a list of all the roles of a traditional movie, eliminated those that were not important for our film, and then taught the students what each role was and allowed students to apply for roles for the film. I asked for submission ideas for the script, but received only a few weak ideas. I worried I had failed before we

had even begun. Without a story, we did not have a film. That's when I realized we had good stories that were written during Writer's Workshop; why don't I just encourage a few of writers to consider using those ideas for script starters? Now our writing had a purpose beyond the pages of their writer's notebooks.

Celebrating Success

Most of the class didn't have a chance to see the entire movie until the actual screening. After the editors and sound designers had finished putting the movie together we invited the whole school, students, teachers, and parents to come screen the film. Watching the students cheer at the end of the film and point to the screen when the credits with their name rolled by was priceless. The success of the movie proved that students can accomplish amazing work.

It also demonstrated the importance of allowing students to learn from their mistakes. After the project one student commented, "During this project, the most important thing I learned about myself was that I can stay on schedule and get things done on time. I learned that I can communicate with others to enhance my portion of the project to make it the best it could be. I can use these skills later in life to accomplish other difficult tasks on hand." A parent noted, "I was absolutely amazed to see the kids step up and take charge. Especially those who are typically disengaged--to be able to reach those kids and get them excited about a project was inspiring." If we had moved on after the one-minute movies, students wouldn't have had the opportunity to grow and experience success in creating exemplary work. Allowing students a chance for a "do over" meant they were able to critically reflect on their earlier efforts, identify strengths and weaknesses, and put their learning into action.

Examples of Student Work

Student-designed DVD cover Student-designed



20. GaGa Pit

What's GaGa?:

Gaga: A game also known as Israeli Dodgeball and played in an octagonal arena. Players may only hit the ball, not hold or throw it. Players are out if they are hit below the waist. It's fast paced, exciting, and tiring!

Grade Level: Middle School

Subject: Engineering, Math

A Foundation in Math

Planning for the Gaga Pit provided a fantastic opportunity to “live math.” In construction, there is a lot of math to know and understand before you can build. We began with the basics, making sure that students could use a ruler, measure in metric and customary units and add fractions. We then went into geometry and talked about angles of regular polygons. We focused on octagons because that was the shape of the Gaga Pit. Finally, I taught the kids about reading pieces of lumber and understanding their actual length versus what they are called. For example, a 2” x4” is actually 1.5” x 3.5” (for reasons known as “capitalism”).

To test students' math skills, I let them practice measuring and cutting with the handsaw. After a brief but vigorous presentation on the concept of “measure twice and cut once,” I gave each student a lot of scrap wood and a list of lengths and angles of varying complexity. Their goal was to cut each piece of wood to specific lengths and accurate angles and let me measure for final checks. Motivation to be precise and accurate was strong; once students passed this test they would earn the right to learn to use power tools.

The facilities staff at High Tech High set up a safety training day for the kids to teach them how to use power tools, from chop saws and circular saws to power drills and power hammers. Students were taught how to cut angles, straight lines and curves. They were taught how to be efficient in their work and re-taught the importance of respecting tools and the people using them.

Defining Student Roles

Once they felt ready to cut, the students were divided into crews. Of the twenty-four students in my class, half became members of the Gaga Pit crew, while the other twelve worked on constructing a second play space of Cornhole boards.

Corn Hole: Two 2' x 4' board on a 40 degree incline with a hole centered at the top.

The objective: To throw four 6" x 6" bags of corn into the hole to earn 21 total points. Players are set up in teams of two, with a player of each team on both sides facing each other about 10 feet apart

The Gaga group was divided into four smaller crews of three workers each. Each crew was in charge of two walls of the Gaga Pit. Each member had an important role. There was the "Architect" to help me with designing the Gaga Pit. One person was the "Supply Manager" and had to order all the supplies from Home Depot. Finally, the third person was the "Site Supervisor" who made sure that all the tools were accounted for and that all materials were brought out to the work site and returned at the end of the day. Each role was extremely important. Each member of the crew had to work with their counterpart in other crews so we didn't design different things, order too many of a product, or take each other's tools.

Examples of Student Work

sawing away



painting the pieces



pit assembled



21. Globe Project

Essential Question(s):

What is the importance of using latitude/longitude to locate places?

Where are continents/oceans located and relative to each other?

What are the major climatic and geographical features around the world?

Short Description:

As an introduction to world history, students will become familiar with the basics of geography by creating their own globe. Steps include drawing/labeling lines of latitude & longitude, plotting continents, and challenge options of climate or geographical features.

Grade Level: Middle School

Subject: Geography, Humanities

Learning Goals

Students will:

understand the importance of using latitude and longitude to locate places.

discover where continents and oceans are located and relative to each other.

learn climatic and geographical features around the world.

Content Topics Addressed

Grades 6–8 Historical and Social Sciences Analysis Skills:

Students use a variety of maps and documents to identify physical and cultural features of neighborhoods, cities, states, and countries and to explain the historical migration of people, expansion and disintegration of empires, and the growth of economic systems.

Examples of Student Work



22. I Am an Artist

Students explored dimensions of their identity and created a double-sided canvas that visually expressed two sides of their selves. On the front of the canvas, they painted an acrylic self-portrait that represented their outer self—how they present themselves to others. On the back side of the canvas, students produced a collage that represented their personal vision and the things that make them unique.

Essential Questions

What do I want in life?

How can I represent who I am without using words?

Teacher Reflection

This project provided students with a way to express who they are and what is important to them, but also to learn about things like composition, color scheme, and how to use acrylic paints and mixed media. It was good for students to think about how to use color and facial expressions, not just words, to represent themselves.

I encouraged students to work in groups to display their works as one unified work of art. The challenge was to make sure that however and wherever the work was displayed, both sides of every piece could be seen by the audience.

—Shani Higgins

Student Reflections

It's important for people of all ages to take art. Art allows people to express themselves and takes their minds off of stressful things like school or some problem they have elsewhere. It can stop people from expressing themselves in destructive ways. It's like therapy. Students who have trouble in other subjects might excel in art, gaining a sense of self-confidence and worth.

—Anthony Arcaro, 9th grade, HTH North County

Art, in my opinion, is the most important class schools have to offer. Art is what makes the world diverse. It lets us express who we are and what sets us apart. We were all made with special gifts and talents, and art gives us a way to express those.

—Anthony Livingston, 9th grade, HTH North County



23. In My Life

Essential Question(s):

- 1) What determines an event in my life 'significant' ?
- 2) Why is writing about my personal life important?
- 3) What makes sharing my personal stories to others valuable?

Short Description:

Every 6th grade student has experienced many significant events so far in their lives. In this project, 6th graders will decide which of these events were most important in shaping the person that they've become today and will get to share them with your classmates and the school community!

Grade Level: 6th, Middle School

Subject: Humanities

Learning Goals

Students will know:

- How to create a timeline of their own life.
- How to write a personal narrative.
- How to effectively tell a story to a small group of individuals

Content Topics Addressed

Writing a Personal Narrative

Using figurative language (i.e. simile, metaphor, personification, hyperbole)

Examples of Student Work

example journal timeline



24. Judo Math

Taking Time to Learn

Why Judo Math?:

Every student learns at their own individual pace. Some kids go through material extremely fast, while other kids need a lot more time. But in most math classes, all students are expected to keep up with the pace of the teacher. They go through a unit. They take a test. Then they move on to the next unit, whether they're ready or not. Kids that never really mastered the current topic are still expected to do well in the next topic. That's Albert Einstein's definition of insanity: doing the same thing over and over and expecting different results. Eventually students become disengaged, and mutter those common words, "I hate math!"

I've often pondered this dilemma, and the solution came to me during a community meeting at my school. The after school program was introducing some sports they were offering, and a Judo instructor was answering some questions. A student asked, "How long does it take to become a black belt?" The instructor replied, "It depends on the person. Everyone goes at his/her own pace." That's exactly what I believed about student learning! So I went online to learn more about Judo. I found that the purpose of learning Judo is to develop character, body, and mind, so that one can contribute something of value to the world. I absolutely loved that message for my students. So I decided to frame my math class around these ideals. One of the core principles of Judo is cooperation--working for mutual welfare and benefit. I wanted to create a motivated and disciplined learner, one who respects the craft of mathematics. Judo Math was born.

Short Description:

An individualized self paced math program created by Dan Thoene at High Tech Middle.

Grade Level: Middle School

Subject: Math

Mastering the Disciplines

Like the martial art practice, Judo Math incorporates the use of varying degrees of belts. The students decided to use rubber bracelets to signify the belt, called an

obi. In ancient times the obi was developed to put the student in the appropriate state of mind. When they put on their obi in class, it signifies that they are ready to learn math.

There are four areas of focus, called disciplines that are studied over the course of the year. Within each discipline, there are four topics that must be mastered. The following list represents the core topics of Algebra that are studied using the Judo Math philosophy in eighth grade. I talked with several ninth grade teachers to find out what they really wanted the kids to know coming into their class. I was able to sum up all of Algebra 1 into sixteen key topics, following the “depth over breadth” model of Singapore math. We’ve been known to hit over a hundred topics a year in America, while Singapore chooses to go in depth on just twelve.

Motivation Through Belts

Each topic in Judo Math represents a belt color. So once we start a discipline, the students start training for a belt. The first topic is represented by a yellow belt, followed by orange, blue and then black. Depending on the material of that topic, we’ll spend maybe one or two weeks on activities and lessons, followed by a belt test at the end. If a student gets 80% or better on their test, they have achieved mastery and progress to the next belt. If a student falls short, then they need another week of training to review similar material. No student moves onto the next topic until they’ve mastered the current one. They can take the test as many times as they’d like until they’ve reached mastery. Some students take one week, while others may take three.

Since Judo preaches working for mutual welfare, those who have already achieved their yellow belt status then become mentors to the rest of the class, helping them through the concepts. It’s everyone’s job to help the entire class reach black belt. In the meantime, the yellow belts start their quest for an orange belt, and the class is split into two groups, both working at their own pace. Before too long, grades don’t even matter to the kids. It’s all about the belts. So we make a big deal out of it. Moving from one belt to the next is celebrated as a monumental achievement. On the following Monday after a Friday test, I hold a “presentation of belts,” where each student who advanced is called up in front of the class to receive their new belt. I congratulate them in Japanese by saying, “Omedetou gozaimasu watashi no gakusei” , while the rest of the class applauds.

There is a sense of pride when moving from one belt to another. The students’ confidence level increases throughout the year due to the marking of their

achievements. Judo Math motivates all students to take responsibility. There are no ability groups, just pacing groups. By the end of each discipline, everyone is a black belt rank, reinforcing the unity of the class.

Early finishers can even keep going by preparing for their sensei belt, which is green. They go beyond Algebra into Geometry and Trigonometry. The sky's the limit for what they'll learn. No student is held back, and no student is left behind. We're all in it together. Once everyone reaches a black belt in a given discipline, we hold a big class party to celebrate the achievement. Then the process starts over again with the next discipline.

Examples of Student Work

Judo in a small group time



Power of the Judo wrist band



Judo One-on-One



25. Lascaux Caves

Essential Question(s):

What makes us distinct as humans? What characterizes human thought and creativity?

Short Description:

Our Lascaux Cave Project explored the essential question, “What makes us human?” Working in groups of four, 6th grade students researched and recreated different panels within the caves. Students compiled their research on Google Docs, which helped them collaborate on the written portion of this project. They investigated the history of the caves, the lives of the Magdalenian people, the purpose and significance of the paintings, and what it means to be human. In addition to each group’s expository writing piece, each student wrote a creative piece from the perspective of a Magdalenian artist. Each group then completed several drafts of the cave panels they were to recreate, eventually recreating the panels on 2’ x 4’ pieces of wood. To give the cave walls a rock-like appearance, students used insulation foam to create a cavernous texture on the wood. The final exhibition took place in the evening and the classroom was transformed into a dark cave, lit only by the flashlights or lanterns students carried. Students acted as tour guides, leading each tour group around the caves while describing the history and significance of the paintings.

Grade Level: 6th, Middle School

Subject: Humanities

Teacher Reflections

The vision for exhibition night was the driving force. Students were motivated by the presentation element of the exhibition and felt responsible to their audience to learn as much content as possible. One student summed-up the collective feeling of the class, “We really had to know our information, because the people we were talking to didn’t know anything about these caves and if we told them something that was wrong, they would believe us and leave thinking it was true!” Students took their responsibility as knowledge-sharers seriously. This was a great lesson in how crucial an authentic audience is for students.

Detailed Description

Requirements

Cave Painting Research and cave painting selection

1. Lascaux Web Quest (completed in partners)
2. Selection of cave painting to research and recreate. Each person within your cave panel group will select a painting or portion of a painting to recreate.
3. Group research on your painting. Respond to the following questions after you' ve selected your painting:
 - a. What is your painting of?
 - b. Why do you think the Magdalenians painted it?
 - c. What does the painting tell us about the life of the people who painted it?
4. Lascaux Brochure Each team will create a brochure to distribute prior to taking visitors on a tour of the cave. This brochure must have four parts:

Part One: The history of the Lascaux Caves

- When/how/by whom was it discovered?
- Where is it located?
- Why is it closed?
- What is Lascaux II?

Part II: The Magdalenian People

- Who were the Magdalenians?
- Why are they significant?
- Were there any other human species around during the Magdalenian era?
(Ex. Neanderthals)
- How did they live?

Part III: The Significance of the Paintings

- Provide an overview of the paintings. What do they depict?
- What do the paintings tell us about life for our ancient ancestors?
- Why are these paintings so important?
- What might they mean?

Part IV: What makes us human

- How are we biologically different from animals?
- How are we emotionally/intellectually different from animals?
- Who first created art? Why?
- Why do humans create painted art and music?

Photo Requirement:

- Each team must have photos in their brochure. These should be of the process of creating your cave wall and a photograph of the original Lascaux.

Recreating the painting and peer critique

1. First sketches of painting. Each group member will draw a sketch of your selected cave painting. It must be as close as possible to the original painting. The sketch will be created first on a piece of white printer paper. It should only be in pencil.
2. First critique of sketches and second draft. Each group member will receive feedback on the sketches. You will recreate your sketch based on the feedback.
3. Gallery walk of sketches and second critique. The class will participate in a full-class gallery walk and critique of the sketches.
4. Third draft of sketches and submission for final selection in groups.
5. Selection of the cave painting sketch to use: as a group, you will decide whose sketch to use as your final cave painting.

Student Reflections

I enjoyed this project because we got to present our hard work to our principal and other adults. They saw how good we are and they got to see how professional we are in the real world. My favorite part of this project was giving people tours and answering questions. --Isabella Modelo

26. Love and War

Essential Question(s):

What is love and war? Are the two related?

Short Description:

This is a joint project between 10th grade humanities and math/chemistry. Through this project students learn about war by reading WWII novels, creating plays based on those novels, researching how chemistry has had an impact on warfare throughout the ages, and then writing newspaper articles based on their research. Students learn about love by studying poetry, analyzing quotes and using photography to represent the quotes, learning about pheromones, and creating their own body scrubs and perfumes.

Grade Level: 10th, Middle School

Subject: Chemistry

Detailed Description

Love and war. Throughout history, these two concepts, although seemingly opposites, have been equated, compared, and related. Through the exploration of love and war students will gain a deeper understanding of history, literature, and chemistry. Love and war provide a lens through which students will learn not only humanities and chemistry concepts, but also gain skills and insights which will apply to their lives today and in the future.

Content Topics Addressed

WWI, WWII, poetry, playwriting, organic chemistry, nuclear chemistry, intermolecular forces, solubility, diffusion

Examples of Student Work



27. Newspaper Plays: Year In Review!

Essential Question(s):

1. How do we get our news?
2. How can I use my voice and body to tell more effective stories?
3. Where did Newspaper Theatre come from?

Short Description:

Through Living Newspaper, students will create original poetry, performance pieces, learn vocal technique, and explore the origins of theatre history through dramaturgical work. Four classes of theatre will perform as the four seasons of culturally significant news. As a grade level, rather than reporting the news, students will perform the news of that year. Exhibiting in December, the 6th grade will present their "Year In Review" through original script and performance.

Grade Level: 6th, Middle School

Subject: Drama

Teacher Reflections

ASSESSMENT

After creating group rubrics and establishing criteria for the following three areas, students will evaluate their work. Below are some components that should be addressed in the group rubric.

Performance– Are actors clearly reporting the news? Are the actors being heard and communicating clearly? Was the performance entertaining and informative?

Program– Is information about the performance clear and available to your audience? What audience are you serving?

Dramaturgy– Do you have a clear understanding of the origins of this work? What are all of the components of the “news” that you’re reporting?

Learning Goals

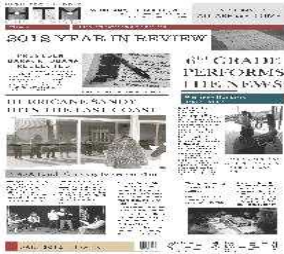
Vocal Technique– Skills Learned: monologue, dialogue, public speaking, breath control, projection

Movement– Skills Learned: body awareness, tableaux, pantomime, spatial relationships

Connections– Skills Learned: Theatre history, dramaturgy. Areas of connection: Humanities and Current Events.

Examples of Student Work

2012 year in review



Newspaper Blackout Poetry Year in Review Performance



28. O, The Places You'll Go!

Essential Question(s):

How will your life look when you are in your late twenties?

What steps will you need to take to accomplish your dreams?

Short Description:

Here's the scenario: the year is 2023. You are now in your late twenties, and you get an invitation to your ten-year high school reunion. Everyone wants to know what you've been up to, and you'll need to explain it. You've gone through college, and you've started up your career. What will you be doing? What is your dream job? The objective of this project is to help you find all the answers you need to map out your life for the next 15 years. You'll need to find a career, a college, and a high school job. You'll need to find out how much it'll cost you to buy a house and pay for utilities and other expenses. This will involve doing some calculations, but the main purpose is to have fun dreaming of the future while realizing what your dreams will cost! Visit Dan Thoene's DP to follow the webquest.

Grade Level: 8th, Middle School

Subject: Humanities, Math

Detailed Description

This is an interdisciplinary project that students will complete independently. The objective of this project is to help students map out their life for the next 15 years, so they can gain a sense of what they will need to do to achieve their dreams. They'll need to find a high school job, a college, and a career. They'll figure out a budget for themselves, and what it will take to buy a house and pay bills. They will complete a series of activities, and put together a portfolio detailing all aspects of their life in their late twenties. Since this project is interdisciplinary, students will complete some activities in Humanities and some in Math/Science class. To see webquest version for students to follow, click here:

Learning Goals

Students will know:

- Vocabulary associated with job searches and classified ads
- How to look for a particular job position

- The qualifications needed for specific careers of interest to them
- Requirements for attending 4-year colleges and universities
- Basic information about federal and state income taxes

Students will understand:

- How to use different methods for deciding which career is right for them
- How the career they chose will affect various aspects of their adult life
- How salaries for particular jobs are determined
- The process of applying for four-year colleges and universities
- The importance of a high-quality professional resume
- How adults create household budgets
- How taxes are levied on various income brackets at the federal and state level
- How homes are purchased, including real estate costs in particular areas, obtaining mortgages, and calculating monthly payments
- How to buy a car

Students will be able to:

- Complete a job application
- Negotiate a starting salary
- Complete a college application, including the Personal Essay
- Interview a professional in the career field of their choice
- Write a professional resume
- Determine their appropriate tax bracket and the amount they will pay based on their salary
- Create a monthly budget using Excel
- Participate in Career Day by dressing professionally, presenting resumes, and interviewing with adult professionals in their career field

29. Open-Ended Math Problems

Opening up to Math

Introduction:

I cannot count the number of times that I have heard from parents and students alike, “Oh, I’ m just not a math person.” For many people, math class is a series of lectures on procedures, followed by lengthy and repetitive problem sets. While some may appreciate this approach, for many, it invokes negative feelings.

During my early years of teaching in a traditional school setting, I often ended up perpetuating these negative feelings. Although I taught with a lot of enthusiasm, the content was just dry. I would move from one chapter to the next, helping students master one set of rules after another with little or no heed for relationships, patterns, or applications. I now realize that the way I was teaching math then was stripping it of its beauty and relevance.

Getting Started:

I initially felt apprehensive about using open-ended problems in my classroom. If the answers were not immediately evident to me, a self-proclaimed “math person,” then I couldn’ t imagine how my students would react. However, after researching the literature on the benefits of open-ended problem solving in the math classroom, I decided to give them a try. During that first year of implementation, my apprehension turned to appreciation and excitement for the freshness and authentic conversation these problems brought to my classroom. Open-ended problems allowed me to teach math with relevance, through multiple strategies. They also helped me to challenge the students who were high achievers and to develop the confidence of the ones who needed more support.

Grade Level: Middle School

Subject: Math

Sample: The Weather Problem

The Weather Problem:

The weather is reported every 9 minutes on ABC and every 12 minutes on CBS. Both stations broadcast the weather at 1:30. When is the next time the stations will broadcast the weather at the same time?

- a) When was the last time (before 1:30) that the weather was reported at the same time?

- b) List the next 5 times that the weather will be reported at the same time. How often does this happen? Explain.
- c) Suppose CBS changed to reporting the news only every 24 minutes. When is the next time that they will report the news together?
- d) Since CBS has been getting low ratings on their weather program, they have decided to only report the news every 45 minutes. After 1:30, when will they report the weather together again?
- e) Are there any numbers you could choose that would make it so that the news programs were never reporting the news at the same time?

Examples of Student Work

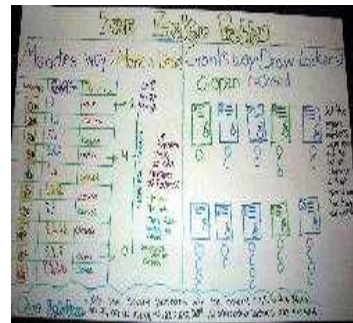
Different Solutions



Students at Work



Different Methods



30. Our Mathematical Adventure

Introduction

Inspired by the Number Devil:

Imagine Jason, a struggling math student in the midst of summer school, getting swooped away to learn about the coordinate plane from a Pablo Picasso painting. Or Mohammed, a young boy who finds a golden canteen which, when rubbed, brings forth the Number Genie who takes him on a mathematical adventure around the world. Jason and Muhammad were once just figments of our students' imagination, but through our Mathematical Adventure Project, the students were able to bring these characters to life in self-published novels about math.

The inspiration for this project came when a parent recommended a book called *The Number Devil* to Sarah for use in her math class. This novel by Hans Magnus Enzensberger tells the story of Robert, a young boy who just doesn't get math. Then, for twelve consecutive nights, he dreams of the Number Devil, a testy but loyal character who awakens Robert to his own abilities as a mathematician. We loved the story, and had already been exploring ways to incorporate literacy across the curriculum. As we discussed the possibilities, our excitement grew and a project idea developed—we would help our students write a novel, inspired by *The Number Devil*, which would incorporate writing, art, and the beauty of math.

Grade Level: 6th, Middle School

Subject: Humanities, Math

Teacher Reflections

It is not often that students are able to incorporate math in their writing class and writing in their math class, and meeting this challenge is exactly what sets this project apart for us. Not only were the students able to deepen their knowledge of many mathematical topics and hone their familiarity with the writing process, but they had a ton of fun along the way. Therein lay the strengths of this project: students were reading and writing about math in an authentic and seamless way.

This project, as with all projects, was not lacking in challenges. We have been teaching together for many years, however facilitating this project opened our eyes anew to the challenges that come with one another's content area. For Sarah, helping the students edit their writing was out of her comfort zone. And for Melissa, explaining the math to the students in a way that made sense posed a new challenge. By working together to overcome these challenges, however, we

know that both of our practices were improved immensely. And we were able to help the students create a beautiful product in which we can all take tremendous pride.

Examples of Student Work

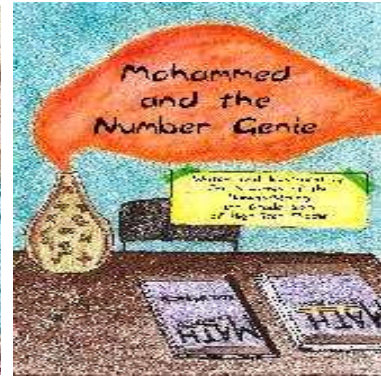
Woman with Parasol



Student Authors Celebrate



Book Cover: Mohammed



31. Out of This World

Essential Question(s):

1. What factors influence people to become who they are?
2. How do others see the world?
3. What lessons people learn from each other?

Short Description:

In *The Little Prince*, the Little Prince explains to the narrator: “People have stars, but they aren't the same...You, though, you'll have stars like nobody else.” Thus, you will create your own planet that answers the following question: What one lesson would you want to teach the world?

Grade Level: 7th, Middle School

Subject: Humanities

Detailed Description

Out of This World: A Project Inspired by *The Little Prince*

Have you ever wondered what factors influence people to become who they are? Have you ever wondered how others see the world? What lessons people learn from each other? In class, you will be reading *The Little Prince* by Antoine De Saint-Exupery and exploring these questions through the creation of your own planet.

Learning Goals

Students will understand:

Metaphor, Symbolism, Multiple Perspective

Students will be able to:

Use symbolism or metaphor to teach others a lesson.

Examples of Student Work

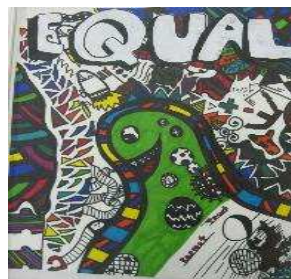
The Golden Rule



Greed



Equality



32. Paper Bag Plays

Essential Question(s):

How does a play go from “page” to “stage?”

Short Description:

Students will study the process of developing plot and enhance their understanding of story structure and elements by writing plays in cooperative groups. Each group will be given a paper bag filled with four unique props, which will provide the impetus for the development of the group’s play. Students will then perform the plays for their peers, parents, and community members.

Grade Level: 6th, Middle School

Subject: Drama

Teacher Reflections

The most exciting part of this project is watching a group of four or five kids go from opening a paper bag full of random props to staging a full production! It starts out with total chaos and becomes an awesome play, with all aspects controlled by the students. I was struck by the way kids really came together to make the plays work. I especially love seeing that pride in their faces when they perform something all original—written, directed, and acted all on their own. The only challenging part of the project comes from balancing group dynamics, like finding ways to keep everyone on task and settling arguments about script writing. But even that part becomes a learning experience as most groups rise to the occasion, learn to cooperate and compromise, and challenge each other to put on the best performance possible. The best part for me is the sense of pride and accomplishment I share with my students as I watch the performances and see how far they have come as actors by the end of the project.

Project In Depth

Learning Goals

Students will know:

- What elements comprise the plot of a story/play
- The format for writing a script

Students will understand:

- How to develop well–rounded characters
- How to develop a well–defined setting
- How to develop a story plot with sequential events
- How to use active listening skills within large and small groups
- How to analyze the conflict and resolution in plays

Students will be able to:

- Develop a story line based on 4 random props found in their paper bags
- Create setting character, conflict and resolution maps for their plays
- Create a plot diagram for their play
- Take on a definitive role in their cooperative group, either as facilitator, director, casting director, or head playwright
- Use problem solving strategies within a cooperative group
- Use the writing process of drafting and revising to develop one–act scripts
- Write a one–act play with well developed plot, characters, and setting, revealing necessary information to the audience through dialogue, action, and props
- Critique the writing and performances of peers in order to help with the revision process
- Publish a final copy of their one–act script using the proper format, including title page
- Rehearse and perform their one–act plays, including props, for an audience of peers and adults

Assessment

Activities

Activities and Strategies

Teacher will conduct group check–ins and critiques at particular points during project to make sure groups are making progress

- a. During planning process: meet with each group to hear character and plot ideas
- b. During Rehearsal phase: Peer Critique—Using form, each groups gives and receives specific feedback from one other group.
- c. During rehearsal phase: Teacher watches rehearsal of each group and give feedback

33. Pompeii: Scenes of Destruction

Essential Question(s):

What can you learn about the values of a society from the artifacts they carry with them into exile or as they flee a natural disaster?

How do social class and wealth/poverty impact human survival?

What can we learn about the rise of an empire from a city frozen in time?

Short Description:

Fifty-eight sixth grade students worked for nearly three months to create original dramatic plays inspired by real events during the eruption of Mt. Vesuvius on the outskirts of ancient Pompeii in 79AD. Their plays – often tragic, yet infused with moments of humor and poignancy – were then produced, directed and performed by students in front of a live audience.

Grade Level: 6th, Middle School

Subject: Humanities

Teacher Reflections

In the future I plan to start teaching historical content about the subject matter in December, so that students may begin script-writing as soon as Presentations of Learning conclude in late January. I would also make different choices about the building materials we chose to use, and actively try to make more connections with the local theater community. An important field trip that we took to the Getty Villa in Los Angeles would have been more inspiring to the students had we taken it a little later when they knew more about the historical content we were studying.

– Andrea Morton

Project In Depth

Learning Goals

History/Social-Science Content

Through a variety of vehicles and activities, students will learn and be able to demonstrate deep understanding of the following historical content:

1. Why are the roots of civilizations often shrouded in legend?
2. What is the history of Pompeii, and why was its destruction by Mt. Vesuvius in A.D. 79 captured the popular imagination for nearly two thousand years?
3. What would an average day in Pompeii have looked like?
4. What does it mean to be an eyewitness to history?

34. San Diego/Tijuana Crossed Gazes

Twenty-two middle school children (12 in Tijuana and 10 in San Diego) learned and applied the technique of “model animation” to produce short animated films about the lives of children on “the other side of the border.” With the support and supervision of trained visual artists, graduate students, and educators, children of each city discussed the ways they think about and represent the “other side.”

Teacher Reflection

This project connected our students to art and international issues. It was a pleasure to see my students engaged in dialogue about the U.S. and Mexico with SDSU grad students and Mexican and French visual artists, while creating a beautifully crafted animation film. The opportunity to learn animation from a French artist, translate French daily to my students, and interact with a diverse group of artists was a real dream. A documentary about their views of the border is being produced, and their animation films will be celebrated in France at international film festivals and used as pedagogical tools at SDSU and other venues. It has changed my life and my students’ lives forever to be a part of something so much bigger than ourselves.

—Zoe Randall

Student Reflection

I thought this film was just for fun, and I didn’ t know French animators were coming. I thought it was only going to take a week, but it took a month, and a month went by very fast. The first time I crossed the border was when we saw the second premiere of our movie in Tijuana. I was kind of scared and nervous because I didn’ t know what was going to happen. But once I got there and stayed awhile, I got comfortable and thought it was a good experience. I got to learn animation and meet new people like never before.

—Josiah Terronez, 6th grade, HTMMA

35. School Leadership Project: HTH Structures in Action

1. Structures for Conversation

Teachers at HTH facilitate structured conversations in their classrooms through such formats as Socratic Seminars, policy debates, literature circles, trials, and simulations. They also encourage active participation by creating norms for being a good audience when a student is sharing his or her work.

2. Critique

Critique is a key structure used at HTH to help students create beautiful work. Inspired by Ron Berger's book, *An Ethic of Excellence: Building a Culture of Craftsmanship with Students*, many teachers at HTH encourage students to give each other specific, helpful, and kind feedback as they refine their work. Students conduct critiques on drafts of writing, early iterations of science projects, preliminary sketches, project proposals, and more. Some HTH teachers also use critique as a way of helping students articulate standards of quality for their work. Together, the class uses critique to generate a common rubric for their final products.

3. Project

HTH Teachers use a variety of strategies to help students stay organized and focused during project time. Many teachers organize students into different departments or crews; students also take on defined roles within a group. To make use of their time wisely, group members complete a daily plan outlining each person's responsibilities.

4. Entry Activities

Entry activities are routines that teachers use at the beginning of class to engage students quickly. Most HTH teachers have a clear daily agenda that prepares students for the day ahead. Many also create a warm-up activity that focuses students on a writing, drawing, or problem-solving task. Other teachers create a daily ritual that builds community among the students.

5. Assessment

Teachers at HTH frequently use informal assessment techniques to check for understanding in the middle of a class. More formal assessment often comes in the form of rubrics that students help to create. Especially during exhibitions, teachers

sometimes incorporate an audience assessment piece to make the assessment process more authentic. Many teachers also create regular opportunities for self-assessment as they attempt to cultivate a habit of reflection among their students.

36. Self Exploration through Yoga, Art and Writing–Intersession

Essential Question(s):

How has Yoga as a historical and modern day discipline allowed individuals to improve the human condition?

Short Description:

This project is a combination of exploring Yoga as a historical discipline and culture, writing and abstract expressionism's history and purpose for self expression. The students will read Esperanza Rising, an autobiography about a young girl's journey and exploration, create an online blog for the purpose of reflection and showing understanding of each day's Yoga practice, its history and the day's student–featured art piece.

Project In Depth

Detailed Description

This intersession explored each student's human condition through Yoga practice, written and artistic self expression. The students researched and presented various eras within the Yoga Culture and types of Yogic practice. In pairs, Abstract Expressionist art pieces, their historical context and meaning were explored and shared. Later, original expressionist works were created and displayed in the form of a mural. Students spent much time in reflective thought and writing on their learning, their physical practice and finally a narrative vignette on a difficulty that altered their human condition in a significant way.

37. Sesame Treat for our Street

Essential Question(s):

How can our writing impact our school?

How can we positively influence our primary classes at HTH?

Short Description:

In this project, students worked side by side with kindergarten, first grade and second grade teachers to develop a puppet show aimed at teaching school rules, social skills, and the importance of accepting and celebrating differences. Each student group planned and created their own puppets, wrote short scripts, and performed their show for various classes in the primary grades at HTeCV.

Project In Depth

Detailed Description

The focus of this project was to teach reading and writing skills through the use of Picture book studies and Puppetry. Students were engaged for a period of 7 to 8 weeks, engaged in various aspects of story and puppet development. In the first week, we took a close look at their favorite childhood picture books, breaking down the story content and use of dialogue between characters. We spent some time looking at Aesop's Fables, annotating the use of style and artful skill of teaching morals, values, and lessons, through storytelling. At that point, students then set up appointments with collaborating HTe teachers, to interview them for issues that they will be able to address in their story development. Through the course of the following 3 to 4 weeks, students were engaged in developing stories, creating puppets, and adapting scripts. The last two weeks, we celebrated their work with in-class puppet shows with whole class critiques in order to prep for their performances for their HTe peers.

Learning Goals

Students will Learn:

1. how to write a short story, focusing on developing Ideas and Organization
2. how to write a beginning, middle, and end, focused on story development and concluding with a moral or lesson
3. how to create adapted performance scripts from a narrative short story

38. Shock and Awe: Projectile Motion in the Crusades

Essential Question(s):

What were the crusades, who was involved in them and how did projectile motion affect the weaponry of the time period?

Short Description:

In this four week project, students were assigned a 20-year time period that fell either in the time leading up to the crusades or during the crusades. In their math/physics class, students spent a significant amount of time learning about projectile motion and quadratics, learning what quadratics are and how to work with them. Students then applied this to projectile motion, making the connection between a parabola and the path of the projectile. In their humanities class, students researched a key event or figure during the Crusades time period and wrote a five-paragraph research paper about their topic. Students developed FLASH movies detailing major events, key figures and the physics behind how weapons were used in battle. Students also applied this information to a 2-page journal article where they created a class journal about the crusades. In addition, students have individually researched specific time periods relating to the Crusades and have synthesized its historical relevance to our world today via an analytical research paper.

Teacher Reflections

What Went Well With This Project:

The FLASH animations turned out very well. Many of the students really began to see the difference in the vertical and horizontal motion by making the animation. It was also very helpful to have the students explain step-by-step how projectile motion works. They began to really see what was going on.

What Would You Do Differently Next Time:

I originally was not going to do a project for projectile motion. For the week and a half before this project, I did several word problems and a lab for projectile motion. I gave a test on the subject and it was very clear to me that the students still did not understand how projectile motion worked. I came up with this project and spent another 2.5 weeks on projectile motion and was very happy I spent the extra time on the project. If I were to do this project again, I would introduce it at the beginning of the projectile motion unit and would spend a total of about 3 weeks doing word problems, creating the FLASH and writing the journal article.

Project in Depth

Learning Goals

Students will be able to create a flash animation and 2–page journal article that describes the history of their time period, a weapon used during that time period and how projectile motion acts on the weapon. Students will also be able to write a 5 paragraph researching a particular person or event from the crusades.

39. Socratic Seminars

Short Description:

Socratic seminars are a protocol for engaging deeply with a text. Seminars are usually used to help students make meaning out of a complex, difficult to understand text.

Grade Level: Middle School, High School

Subject: Pedagogy

40. Staff Class to the Past: Time Travel Through U.S. History

Essential Question(s):

What are the most significant events in U.S. history?

What would it be like to travel back in time and experience history as it unfolded?

Short Description:

As a class of 56 8th graders, we first determined the 16 most significant events in U.S. history through a Socratic Seminar discussion. We then constructed a wormhole to travel back in time (via time-traveling bus) in order to experience our chosen events, firsthand, alongside the historical characters and events we researched. We documented our experiences through PhotoShop images and vignettes and compiled them into a Blurb.com book.

Grade Level: 8th, Middle School

Subject: History, Humanities

Teacher Reflections

"Sometimes, it can be challenging to get my students (and myself) excited about researching major events in U.S. history, but time-travel was a great hook. One of my students came up with the idea of traveling through a worm hole and using gummy worms to come back to our time-traveling bus. I loved hearing all of the creative ideas come out during this project as students planned where they would travel back in time and who they would meet in the context of their chosen historical event. We brought history alive by imagining ourselves traveling back in time into it, and I think creating the PhotoShop images and using the green screen brought more fun and enthusiasm to the project. I really enjoyed traveling through time alongside my students."

– Cady Staff, 8th grade Humanities teacher, HTMCV

Project In Depth

Learning Goals

Students will know:

the 5 W's of the 16 "most significant" (according to our classroom debate) events in U.S. history quotes from significant historical figures

Students will understand:

how we determine an event in history "significant" the habit of mind – S.P.E.C.S. (significance, perspective, evidence, connections and supposition) why we study history

Students will be able to:

- build a timeline
- research historical events and take notes
- summarize and synthesize researched information to use in a creative writing piece
- write vignettes using sensory details
- peer edit using kind, helpful and specific feedback
- insert themselves into historical images using PhotoShop
- use Green Screen to travel back in time in iMovie
- apply S.P.E.C.S. (significance, perspective, evidence, connections and supposition) to major events in U.S. history

Assessment

Activities

On top of getting credit for each draft of their writing piece, the peer editing process and their PhotoShop images, each student was required to post a reflection on their DP (digital portfolio) and to apply S.P.E.C.S. to their major event in U.S. history. Students presented this reflection from their DP during their P.O.L. (presentation of learning) in front of their parents, teacher and community members.

41. Stippling Self Portraits

Essential Question(s):

How do artists use the stippling technique to create monochromatic self-portraits?

Short Description:

The purpose of this project is to learn to shade using the stippling technique. Students will first practice this technique on an egg since it is shaped similar to a face. Then, they will create an 8.5" x 11" thumbnail sketch of their own face using the stippling technique. Finally, students will use the opaque projector to enlarge their monochromatic self portrait to 3' x 3' .

Grade Level: 8th, Middle School

Subject: Art

Teacher Reflections

The Stippling Self-Portrait project was the first of the semester with my 8th graders. In the beginning, I was concerned with whether or not they retained skills from their time in my class in the 6th grade. When we discussed concepts and completed practice sketches, I was pleasantly surprised at how much they remembered from being in my class two years earlier. In the middle of the project we completed a class critique of 20 self-portraits. All students participated in the critique using classroom vocabulary. I was surprised at the thoughtful feedback my students provided, and the language and constructive criticism did not stop after the group critique. I was pleased to observe my students continue to offer advice and confide in their peers for assistance with their work.

Project In Depth

Learning Goals

Students will know:

- Specific vocabulary related to the project: Self-Portrait, Thumbnail Sketch, hue, tint, shade, monochromatic, pointillism, aesthetic

Students will understand:

- How artists use thumbnail sketches to develop the initial concept of a larger art piece

- The importance of viewing their work from a distance of approximately 5 feet in order to see it as others will
- How to determine highlights and shadows in an object or face
- How to use the critique process to give and receive specific feedback
- How to improve their work based on feedback from critiques

42. Submarine Density Project

Essential Question(s):

How can students learn the concept of density through hands on experience?

Short Description:

Students construct mini submarines in order to explain how density, mass and volume work in a real environment.

Grade Level: 6th, Middle School

Subject: Math, Science

Project In Depth

Learning Goals

Students will know:

Measure the volume and mass of their submarine

Calculate the density of their submarine in two locations (floating & sinking)

Know the density of water and use it to determine the density of other objects

Identify at least two ways of changing the density of an object

Apply the scientific method

43. Superstition Trading Cards

Essential Question(s):

What are superstitions?

How are they perceived in society?

How are trading cards designed to be appealing?

Short Description:

Students will discuss historical and cultural superstitions as they apply to society. After discussion, they will create original superstitions that consist of an action and a consequence. Students will take their newly created superstitions and make a digital version of the trading card in Photoshop.

Grade Level: 6th, Middle School

Subject: Multimedia

Project In Depth

Learning Goals

Students will know:

How to search for images online

Import & resize images in Photoshop

Save and upload to their digital portfolio

Students will understand:

Basic tools and navigation in Photoshop

Students will be able to:

Create an original, edited photo from scratch

44. The Bike Tour

Essential Question(s):

Students will learn to:

create a bike route

capture photographs

edit photographs using Photoshop and iMovie

create audio/video tour

Short Description:

In this project, students will research the city of San Marcos and create a 10+ mile bike tour highlighting various historical and current points of interest. Each group of students will be responsible for a certain leg of the bike tour and create a video showcasing their part. At the end of the project, each part will be compiled to make the tour and our class will ride the tour ourselves. We are partnering with the City of San Marcos Parks and Recreation to make the tour available for download to iPods and cell phones.

Grade Level: Middle School

Subject: Multimedia

45. The Bridge Project

Essential Question(s):

What structures support and strengthen your bridge and learning at HTMCV?

Short Description:

As an entry project for our founding 8th grade HTMCV, students set out both figuratively and scientifically to build a bridge into the world of Project-Based Learning. Students worked in cooperative groups to construct a bridge made entirely out of toothpicks, engineered to withstand the greatest weight possible. At the heart of the project, students learned the key components of PBL: hands-on activity, academic application, public presentation of work and group cooperation.

Grade Level: 8th, Middle School

Subject: Engineering, Math, Science

Project In Depth

Detailed Description

Students had to form bridge construction crews composed of four people and each individual was assigned a role with specific responsibilities. There was a Project Manager, Engineer, Accountant, and Carpenter. Each building crew worked together to engineer a bridge to meet critical code specifications and work within a given budget of money which they used to purchase materials. Students had to engage in design planning understanding how to use precious resources (toothpicks & glue) and manage their ongoing building process. Each construction company (a group of four students) had to file specific schematics with building inspectors (their teachers), had to explain their reasoning for designs, had to track all expenses and inventory, and ultimately had to make decisions as a group to decide what was best for their bridge. Ultimately, students built their bridge for destruction for the bridge-breaking ceremony where weights were increased to the bridge's breaking point.

Learning Goals

Throughout this project and by its end, students will have a strong understanding of the following:

How design & engineering are crucial to the success of any project.

The elements and skills needed to work successfully in a group.

The key forces on a structure and how engineering designs meet those forces.

The key aspects of presenting work professionally and academically to a larger audience.

How to plan a construction project with limited financial resources.

46. The Contracting Project

Essential Question(s):

How are fractions ratios and proportions used in the real world?

What does it take to run your own business?

Short Description:

In this math-based project students explored what it takes to run their own contracting business. In this project, students explored what it takes to develop a product based around a specific clients needs.

Grade Level: 7th, Middle School

Subject: Math

Project In Depth

Detailed Description

In groups, students were assigned to a specific client in need of a specific item. They then met with this client to determine their needs, requirements and budget. From this meeting, students worked together to create a proposal for their client, which included a scale drawing, a 3d rendering of the final project, a scale model, and an estimated budget for the project to be created, which they presented to their clients for approval. If the client approved the proposal and agreed to the students' terms of contract, materials were purchased and the product was constructed. Students' final assessment on this project was based on whether or not their clients purchased the final product from them.

Assessment

Activities

Students grades were based upon meeting deadlines, and client feedback. With the majority of their grade being based on whether or not their client chose to purchase their final product.

47. The Mayan Community Project

Essential Question(s):

Why is it important to learn about the Mayan civilization today?

How are books published and marketed?

What is life currently like for people of Mayan descent?

Short Description:

After doing extensive individual and group research on current and ancient aspects of Mayan culture, students will summarize information from their research to write and illustrate a children's book, A-Z: What We Learned about Mayan Culture. Each student will be responsible for creating his/her own page with illustrations to contribute to the class book. The book will be bilingual and each student will have a chance to translate parts of their work into Spanish with help from the Spanish teacher. As a class, students will produce, promote, publish, and sell the book, operating as a business with committees and job positions. All proceeds from book sales will go to sending impoverished children to school for a year in the Mayan towns near Lake Atitlan in the highlands of Guatemala.

Grade Level: 7th, Middle School

Subject: History, Humanities

Teacher Reflections

The Mayan Community Project is always an adventure and, to me, illustrates the fun and chaos possible from project based learning. The beginning is very researched based and somewhat controlled, but as the project moves toward completion, the students take over in their committees, and I feel more and more in the shadows of their work. What always strikes me most about their work is how authentic it is and how all the students revel in it. This year every single student submitted several drafts of their text, several drafts of their illustration, and an attempt at Spanish translation. Every student wants to be in a real published book, and I love how so many of them can keep the bigger goal of helping others in their mind as they work. Throughout the process, they often expressed their fears about making mistakes that would hurt our book sales and concerns that our choices would cause us to make less profit and not help as many kids as we wanted. The students are SO proud of their work, each and every one of them, and I couldn't be prouder of them.

Project In Depth

Learning Goals

Students will know:

- Comprehensive information about Mayan culture, including: class structures, family life, warfare, religious beliefs and practices, artistic and oral traditions, architecture, locations, climates, and Spanish influences.
- How to use Photoshop to manipulate images and create artwork
- How to track expenses and profits using Excel spreadsheets
- What a business plan is

Students will understand:

- How the legacy of the Mayan culture influences and affects Central American society today
- The reality of poverty in Central America and how to make a difference in an impoverished child' s life
- The importance of effective business planning and marketing, and its influence on the success of a product
- The importance of fulfilling individual and group responsibilities within a “company”
- How authors use the writing process to improve their work for publication

Students will be able to:

- Read a variety of non-fiction texts and analyze maps, graphs, and images related to the topic
- Create informative PowerPoints and useful study guides for their peers
- Successfully complete the quiz to demonstrate comprehensive knowledge of the topic
- Synthesize and summarize information into a written and illustrated page for a children' s book

48. The New Americans Project

Essential Question(s):

Why do people immigrate to America?

How does it feel to be a stranger in a foreign land?

How has immigration affected America?

How do historians work? Short Description:

Students will become historians as they research the life of a “new American.” They will be partnered with a new American, either a person they know or one assigned by the teacher. Students will learn about the person’s life using interviews and research. Each student will create a unique final product to commemorate the person they researched. Students will participate in whole-class and small group activities such as webquests, field trips, and literature circles to enhance their learning about the historical issues surrounding immigration and the challenges faced by today’s immigrants.

Grade Level: 8th, Middle School

Subject: History, Humanities

Teacher Reflections

As we began to plan this project and create lesson plans around the topic of immigration, we were both very excited. We thought that the students would really enjoy learning about various cultures, especially since many of them are immigrants or children of immigrants. Both of us have a personal connection to the topic and were looking forward to sharing our family’s experiences. What struck us most about this project is how much effort and time the students put to create a really thoughtful gift for their participants. We had several students who were not happy with their final products and redid their gift before giving it to their participant. Also, there were several students who liked more than one option as the gift, so they chose to do more than one gift. There were many favorite parts of this project for us. One was the field trips to Balboa Park and to the New Americans Museum. The students learned a lot and it was so much more meaningful to learn through paintings, quotes, and photographs, rather than us simply lecturing about the experience of immigrants. Another favorite part was hearing that the students enjoyed learning about their participants’ lives and learning about a different culture in their project reflections. One student

interviewed someone from Latvia who never even knew the country existed and learned so much about the country. The most challenging part about this project was getting enough participants for every student to interview. Once we thought we had enough, there were participants that were difficult to get a hold of or set the time aside to complete 3 interviews. Some suggestions we have for a teacher that would like to do this project would be to try and encourage students to find their own participants with the help of their parents. Another suggestion is for the teacher to directly inform participants about the time commitment that is involved in this project. A final revision would be to allow more time in class for students to work on their final gift. Many students struggled to manage their time at home. All in all, this was one of our favorite projects and the kids' favorite projects as well this school year.

Learning Goals

Facts and Information

- What an immigrant is
- Information specific to the country the subject is from
- How people become citizens after immigrating
- Information about the history of Ellis Island and Angel Island, including when and how both were used as ports of entry and detention centers
- What quota laws were and how they affected immigration
- What the Chinese Exclusion Act was; when it was enacted and repealed

Students will understand:

- How immigration contributes to the richness of American society, past and present
- The impact of different immigrant groups throughout American history
- Why people immigrate to America
- What life is like for immigrants in America, including challenges and discrimination immigrants face
- How to view history from multiple perspectives
- How historians use oral history to interpret events
- The assimilation process for immigrants
- The purpose, significance, and role of Ellis Island and Angel Island in the history of immigration to the United States
- How it felt to be an immigrant arriving at Ellis Island or Angel Island, particularly how it felt to be detained or interrogated
- Current challenges faced by immigrants to America

Students will be able to:

- Take adequate research notes about a particular country
- Use the processes and equipment related to oral history in order to conduct informative interviews with an immigrant
- Create a commemorative product detailing the life and experiences of a “New American”
- Write a poem reflecting the theme of “America Through My Eyes”
- Read and analyze a work of literature related to immigration
- Participate thoughtfully in online literature circle discussions by writing thoughtful, analytical responses and posing relevant discussion questions for peers
- Create a work of art and artist statement that reflects their understanding of the literature
- Compare and contrast challenges faced by different immigrant groups of the past and present
- Write a song that depicts the experiences of an immigrant group from American history

Examples of Student Work



49. The Parchitecture Project

Essential Question(s):

How can we create a play area that is accessible and enjoyable to all students?

Short Description:

Using Google Sketch Up, students design a student play-area for the new High Tech High K-8 school in Chula Vista. Students create design firms, conduct student surveys for input on their design, determine budget costs, and propose their ideas to a panel of adults and peers. Students have complete control of the design of the space with the stipulation that it must be safe and accessible to all students.

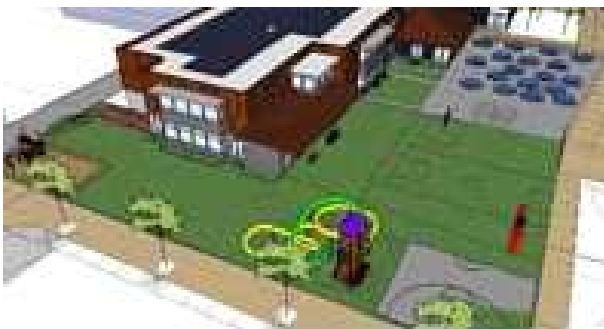
Grade Level: 6th, K-5, Middle School

Subject: Graphic Design, Math, Multimedia

Learning Goals

- Understand how to create and scale blueprints
- Understand positive and negative numbers and balance a budget
- Understand how to calculate area and budget costs accordingly
- Express creativity seen through to design
- Exposure and experience with Adobe Photoshop
- Experience using Google Sketch Up and creating 3-D computer modeling
- Understand statistical analysis related to surveys

Examples of Student Work



50. The Toy Factory

Essential Question(s):

What are the defining characteristics of an electric circuit interaction, and how do they play a part in everyday life.

Short Description:

The only requirements for this project is that the student has to use an electric motor, a switch and a battery to make any kind of toy they'd like to make. The culminating exhibition is to try and sell their device at a toy store. They'll create their own company, advertising campaign and company logo. Then they'll go to the children's hospital to present and donate their toy for kids to play with.

Grade Level: 8th, Middle School

Subject: Physics

Learning Goals

Students will know:

The defining characteristics of an electrical circuit interaction, electric charge interaction, electromagnetic interaction and magnetic interaction.

What the six simple machines are and how to increase their mechanical advantage.

How to build an electric motor

What a double pole double throw switch is

Students will understand:

How an electric motor works

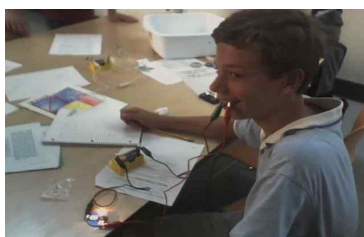
How to hook up varying degrees of electric circuits with switches

How to market a product for sale

Students will be able to:

Use their imagination to create something of value to the world.

Examples of Student Work



51. This American Life: An Immigration Project

Essential Question(s):

- Why do people immigrate to the United States?
- What challenges have immigrants faced throughout history?
- What challenges do immigrants face today?
- How do immigrants negotiate between two cultural worlds?
- What makes a conceptual art piece “successful” ?

Short Description:

This cross-curricular humanities/art project aims to engage students in exploring the human face of immigration. Through interviews, literature circle reading, and field experiences, students will better understand the challenges that immigrants face and their perspectives on life in the United States. Students will learn about the history of various immigrant groups and explore how immigration influences our local community.

Grade Level: 8th, Middle School

Subject: History, Humanities

Teacher Reflections

In Southern California immigration can be a polarizing topic. Many often forget that most of us are descendants of immigrants. The goal of this project was for students to understand multiple perspectives on immigration. This included understanding the challenges that immigrants have faced throughout history and today. We wanted students to recognize the common push and pull factors that influence peoples' decisions to leave their home countries and move to the United States.

Our proximity to the U.S.–Mexican border makes this project relevant to our student population. Many of our students have family members who immigrated from Mexico and other Latin American countries. We wanted all of our students to understand that every immigrant has a story of why they came to the U.S., and these stories are linked throughout history.

At the end of this project, we were pleased with our students' abilities to empathize with other peoples' experiences and understand multiple perspectives on immigration. The field experiences and guest speakers made this a memorable and impactful project for our students.

Learning Goals

Students will understand:

Push and pull factors that influence immigration trends

Themes that link historical immigration with present day immigration issues.

The challenges that immigrants face when starting a new life in a new country.

Various perspectives on immigration policy.

52. Time Lapse Video Project

Essential Question(s):

Why do editors assemble film a certain way?

What kind of mood can be created with editing choices?

How does music affect an edited piece of video?

Short Description:

Students create music videos using time lapse photography and video.

Grade Level: 7th, Middle School

Subject: Multimedia

Student Reflections

The time lapse project was essentially a project in which we created a movie with a theme, then remixed the movie anywhere from 1–3 more times. Through this project, we learned about photography/cameras and iMovie. This project was completely different from anything I've done in Multimedia because of the "remixing" factor; by creating something new from the footage we already had, we learned more about iMovie tools than we ever had before. This project was fun because we got to decide the theme of the movie, whereas in previous iMovie projects we were given a topic to make a movie around. It is important to exhibit our work because we need our friends/family members to see what we have been working on during school. We exhibited this project by renting a U–Haul and setting up a projector and screen inside, therefore creating a "movie–theatre", right there in the U–Haul. -- Jenna

The time lapse project was a very fun and exciting project for me, because we got to take a twist on our usual multimedia projects. We were able to create a video about anything we wanted. For my project I decided to take a little bit of a look at nature and daily life. I just kind of made mine all random. This project was a little bit different than what we have done in the past in multimedia. We really got to take it to the next level and create something really cool. I find it very important for people to exhibit children's work. This helps the children know and realize that what they have created is important and liked. This helps to encourage kids and help them to create more beautiful work. Our most recent event was Exhibition. This event is directed to people from the community, coming to our

school to view student work. For our Time lapse exhibit we set up the videos in a U-Haul, because it wasn't dark enough outside. Visitors could walk in to the U-Haul and view their students' videos. It was really fun for us to proudly show what we had created.

-- Marissa

This project was about learning about time lapse videoing and how to do more stuff in iMovie. This project was different because I had never actually done a time lapse video, but I had always wanted to do one. This project was really fun! It was fun because I had always wanted to do this and we got to sit around and work on music and stuff while we waited for the video to be long. It's important to exhibit our work because then people can give us good feedback for the next time/project.

-- Dylan

53. Toy Story

Essential Question(s):

How do non-battery operated toys work?

How do I decide what type of product is desirable for my target market group?

Why are marketing techniques so effective at making me want to buy products?

Short Description:

Every time you turn on the television, check your email, or listen to the radio someone is trying to sell you something. Now is your opportunity to turn the table! You will become engineers, advertising executives, and children's authors at a small toy firm. After gaining an initial understanding of how existing toys are made and marketed, we will conduct field research to help us design and market new toys. For our school-wide exhibition, we will convert the entire 8th grade into a toy factory to display our work.

Grade Level: 8th, Middle School

Subject: Humanities, Math, Science

Learning Goals

Project Goals for Math/Science:

Learn about simple machines.

Conduct field research on toys for a targeted age group.

Reverse engineer a toy of the students' choice.

Create a schematic diagram, which identifies all parts of the toy and the simple machine(s) required to make the toy work.

Prepare a market analysis using charts and statistical projections.

Improve an existing toy or build your own toy from scratch based on what was learned from the reverse-engineering process.

Project Goals for Humanities:

Learn persuasive writing techniques (e.g., bandwagon, testimonials, glittering generalities) and incorporate into a marketing campaign

Learn elements of short story writing (e.g., creating a believable character, plot development, and audience).



54. Urban Ecology

Essential Question(s):

What is urban ecology?

How can humans create sustainable and efficient modern urban ecosystems?

Short Description:

Students will discover how humans interact with nature in urban ecosystems. They will understand the terms sustainable and efficient in order to apply them to designing improved modern cities. Students will research green building techniques, alternative transportation options and alternate energy. As a class, students will collaborate in both science and humanities classes to present their research in an Urban Ecology Magazine. The class goal is to publish our magazine in time for the HTM annual Exhibition Night in order to educate our community on this pertinent and contemporary topic.

Grade Level: 6th, Middle School

Subject: Biology, Graphic Design, Humanities, Science

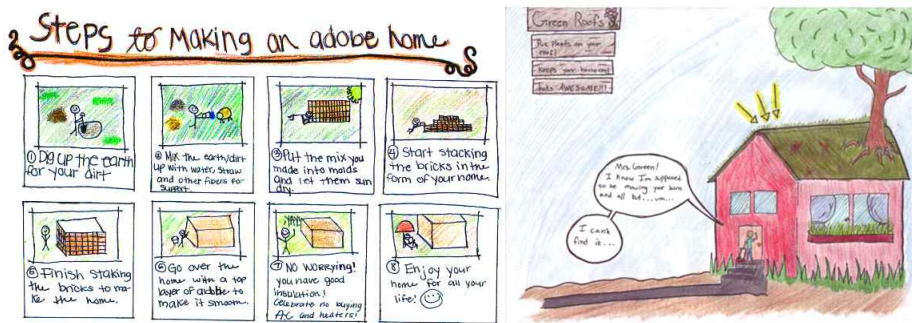
Teacher Reflections

From Nicole Costa, Math/Science Teacher

The first thing that struck me when I began this project was that the subject matter was very adult. Initially I was concerned that the topic was over the heads of my students and that their interest was low. Initially it was difficult to get 6th graders to care about “green” building. Once the project got underway and students were able to see pictures of their topics, see their work turned into an article, and create magazine artwork, the buy-in for them was authentic. The best part of the project was seeing the students get excited about their topics, creating their artwork and laboring over making their article perfect for the magazine. The magazine really made the adult-world topic even more exciting for them because they were proud of showing off their knowledge of this advanced topic in a public way. Towards the end of the project the most gratifying part was when our classroom had literally been turned into a magazine work room. Bobby and I were just editing and the students were scurrying around doing all the work. They were scanning artwork, helping each other edit, working in Adobe Indesign, creating models of their topics and perfecting their layouts. It was an incredible vision of controlled chaos. The most challenging part of the project was all the editing. The

magazine still probably has some editing mistakes we couldn't catch. Every night I was up all hours reading and editing, then I would wake up and edit and then would spend all day at school editing. The students had so many drafts, which was made it successful. The problem was that once they were typing, they would re-make new edits and turn in work with NEW mistakes. Next time I want to set aside more time for this project so I am not so pressured with editing. It was also a struggle for the students to turn their research into their article. I want to re-make our planning guide so the students are more clear about what to do. I would suggest allowing 6 weeks for this project and doing lots of research beforehand so the students have plenty of great websites, info sheets, pictures, articles and resources. It was challenging to make sure I could give all the students useful resources to get information about their topics. There are not many books written about "green" building and alternative transportation on a middle school level. Exhibition Night was the ultimate ending to this project. The students and parents were so excited about the magazine. The students were all so knowledgeable and thrilled to share with adults. I am so proud of my students.

Examples of Student Work



55. Why Does Ms. Costa Have Worms?

Essential Question(s):

What is composting and vermicomposting and why are they important?

Short Description:

Students will learn why their teacher has a vermicomposting box of worms through inquiry based learning. Students will also master the ecologic principle of recycling in nature (the nutrient cycle) and how humans can be a part of it. Students will learn where their trash goes here in San Diego, make connections between available landfill space and using worms to recycle. As a class we will design and create worm bins for the school to use for composting food scraps at lunch.

Grade Level: 6th, Middle School

Subject: Biology, Science

Activities

Assessment:

Students will take a formative assessment to survey class knowledge, previous experience and interest.

Presentations will be assessed on an individual basis with a rubric.

The lesson will end with a written summative assessment that includes higher-level thinking questions about composting, vermicomposting and the nutrient cycle.

Examples of Student Work



56. X, Y Marks the Spot

Inspiration:

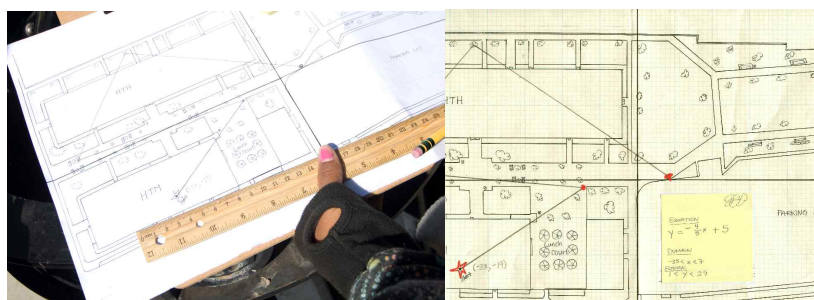
Inspiration for projects often comes when I least expect it. A radio article I heard on NPR about geocaching inspired me to create this math project. Immediately thoughts of longitudinal and latitudinal lines streaked across my mind creating a Cartesian plane. Individual locations served as the coordinates; routes from one place to another were defined by linear equations. A mathematical treasure map was born.

Initially, I imagined a traditional geocaching activity whereby students might use electronic GPS units to calculate latitude and longitude of specific locations, and from this data they could create linear equations which would define the line that intersects these points. This idea was hampered by two main factors: the prohibitively expensive cost of supplying my class with decent quality GPS units and the logistics of supervising the hunt they would create. I scaled back the idea to fit the school and came up with the idea of creating a treasure hunt using the blue prints of the school. Students would be required to define ten stopping points within our school leading to the treasure. These points would be defined using a Cartesian coordinate system (X,Y) and connected using straight lines. It was not your typical treasure map, but the students were excited nonetheless.

Grade Level: 7th, Middle School

Subject: Math, Science

Examples of Student Work



57. YOUville: Creating a Civilization that meets basic needs

Essential Question(s):

What must be established so that the needs of a civilization are met?

How do the basic needs in Maslow's Hierarchy being met or neglected affect the daily lives of people?

Short Description:

During the course of this project you will build a civilization based on the Maslow's Hierarchy of Needs pyramid. Before we begin we'll look at some of history's civilizations; what components they all share, and how they differ from one another. We'll compare and contrast, then you'll begin creating your own civilization based on what you want to imitate from others in history and what your brilliant mind can come up with today! The civilization you create will already have an established and developed, modern-day location.

There will be 4 tasks involved in the project. Each of the tasks will be based on the first four levels of the Maslow's pyramid. The 5th level of the pyramid, self-actualization, will be our goal for the inhabitants of our civilization. Each task will have a product at its completion that will represent the system in place to meet that need.

At the end of the 4 tasks you will compile them all to create ONE large visual of your civilization!

Grade Level: 6th, Middle School

Subject: History, Humanities

Examples of Student Work

