Kindergarten Project

Cycles and Patterns: Insects, Plants, and Caterpillars

For our insect study, each child chose an insect they wanted to research independently. The children drew a picture of their insect and labeled its parts. Finally, the children created a clay model of their insect.

We read “Diary of a Worm”, a book looking at daily life from the perspective of a worm. Each child created a diary writing daily entries from the perspective of the insect her or she was studying.

As part of the insect study, we also raised caterpillars and watched them go through the cycle of egg-caterpillar-pupa-butterfly. Each child illustrated one part of the cycle.

We also explored plants and seeds this year. We sprouted a bean in a plastic bag. We took apart a plant and looked at its parts. We also took a trip to the Carlsbad Flower Fields, a commercial flower farm. As a class, we created a poster showing the four things a plants needs to grow: water, sun, soil, and air.

Finally, we had a discussion about the parallels between the lifecycles of plants and butterflies.
First grade students explored the marine ecosystem to answer the question, “Why should first graders care about the ocean?” Throughout the project students engaged in work with local marine scientists which helped them gain insight into what a scientist does to study the ocean and why it is important. Students also developed collaboration and research skills through their research work on ocean animals. Another component of the project was translating their knowledge about the ocean into art to share their passion for preserving the ocean. Examples of art work ranged from collaborations with local artist to work on watercoloring projects, repurposing trash to model ocean animals and rewriting a popular pop song to express their answers to the projects essential question.

This project was a part of a grant from the WAITT Foundation, whose goal is to promote knowledge of ocean preservation and to connect K-12 students with local marine scientists. Students worked with local marine scientists to explore the ocean and learn about the different tools and techniques that scientists use to study the ocean. Students focused on types of ocean pollution (trash and sound) and explored ways each type of pollution affects the ocean and their own environments (home and school). Students also discussed local environmental issues and drafted possible solutions. Student then shared their knowledge through art and song.
Why is it important to have access to books? How can we help our community get access to books?

Being able to read is more than a way to stay entertained, it is a gateway into the world. During this project, second grade students at HTeNC investigated literacy and the importance of access to books, through designing, building, installing, and filling a little library to serve the community.

During this project, students used a variety of resources to research ways children around the world and locally access books, as well as the way access to books can affect a community. Second graders then researched community locations where access to books are limited, and paired with a preschool in these areas to help create a book sharing program on their campus. Students learned from architects and went through the blueprint and critique process to create and build a small free standing structure to serve as the Free Library. Students looked at what makes an effective library, and used data collected on the book preferences of children at the preschool to paint and fill the libraries. Second graders also studied different types of literature and explored illustration techniques as they worked in groups to write high quality and engaging books to include in the library. Students raised money for the materials required by designing and selling shirts that promoted literacy. This was a 19 week project broken into two distinct segments to better narrow the focus the various elements of the project.
Who are dreamers? Can “dreamers” have more than one dream? What are my dreams?

Why are we here if not to dream? In this project, students will engage in conversation with different members of our San Diego community to investigate the wide scope of dreams an individual may have in their lifetime. In honor of April being National Poetry Month, they will seek inspiration from various poets, and deeply examine their own lives and dreams for the future to create a piece of writing accompanied by a mixed media illustration. These poems will be compiled into an anthology and published by a company selected by the students based on cost and time efficiency. Their co-created anthology will act as a “dreamcatcher,” or legacy project, of the student’s aspirations at this point in time.
Each student created a unique colored pencil illustration and nonfiction narrative about a geological topic. The collection of work was published as informative “cards” to be used by other children and families. Cards are also distributed by the San Dieguito River Valley Conservancy to “Junior Members” as encouragement and a resource when exploring the San Dieguito River Park and other natural spaces in San Diego County.

Additionally, students excavated marine fossils from 45 million-year-old local rock material in collaboration with the San Diego Natural History Museum (“The NAT”). Their specimens of snails and clams will become part of the museum’s research collection.
5th Grade Project

Student Projects

Life By The Tide: Our Coastal Ecosystems

Fifth grade students, new to project based learning, have worked cooperatively to help create our High Tech Elementary community. Learning about the greater HTH purpose and how they can make individual contributions, students are considering their ways they can learn about the broader San Diego community, with a particular focus on coastal habitats. We were asked by the education department at Cabrillo National Monument to curate educational materials about the intertidal zone to be showcased at the 2016 Climate Science Alliance meeting in San Diego. Our students will conduct research about this ecosystem and the organisms that inhabit this region. Through field work, research, presentations by experts, and modeling, students will curate posters and species cards to enhance the educational efforts for our local National Park. Once students learn about the intertidal ecosystems, they will begin to examine the health of the greater ocean and the impact of pollution, plastics, and climate change on local species and habitats. Students will have the opportunity to create further educational materials for Cabrillo. In April and May, we will be trained to instruct other students to participate in the 2016 National Parks BioBlitz at Cabrillo National Monument. This species sampling has been organized to celebrate 100 years of service of national parks, looking at biodiversity of species across our nation. Students will learn more about the human impact on our coastal habitats and think more critically about their responsibility to our natural world.
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!

**Project Details/Design Constraints:**

- 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)
The Mayan Community Project

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?

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.
8th Grade Project

Student Projects

Actually, it is Rocket Science

What is Motion and how do we create and control it?
How is the science of rockets the science of your every day world?

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!

You will compete and be assessed on:
• How high your rocket goes.
• The effectiveness of guidance and recovery systems of your rocket.
• Overall creativity, aesthetic and thoughtful design of the final product.

Essential Questions
What is Motion and how do we create and control it?
How is the science of rockets the science of your every day world?

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
How can we help provide San Diego artists with affordable housing?

In collaboration with Space4Art, students worked with local artists to design and build tiny homes that would allow the artists to remain in the expensive San Diego region and produce their art. The project began with students honing their building skills by helping construct a pocket park in Barrio Logan in collaboration with Space4Art. Next, students launched a fundraising campaign on Kickstarter and raised over $18,000 to finance one tiny home. Students formed groups and each group was paired with a local artist who became that group's client. After interviewing clients about their needs and wants, students produced professional drawings and 3-d models that were critiqued by the clients and professional architects. All students participated in the construction of one tiny home.
Students in the Wicked Soap Company use the engineering design process to make and then sell amazing soap. Our young stakeholders are responsible for every aspect of the design, planning, creation, packaging, sales, and proceeds. Student use Chemistry to run an authentic business. They experiment with ingredients, ratios, and methods to refine their some into something useful and beautiful. Market research is done to find out what the consumers want and how we can best meet their needs. The Wicked Soap Company was launched in January 2015 and continues to grow today.
"On the Origin of Synthetic Species" was an 11 week inquiry-based journey in biology and art that served to rewrite Darwin's seminal work "On the Origin of Species". Students incorporated protocols and techniques from biotechnology and genomics labs from project partners to apply new understandings of evolution as comparisons to chapters and experiments from the original work. Using reflections of computation biology techniques in the 21st century and their own work, students wrote their own version of the book as a re-examination of Charles Darwin’s observations. Some of those current applications from the project include DNA editing with use of CRISPR, competition in the 2016 BioEnergizeMe project, the creation of synthetic life and metagenomic studies at JCVI, analysis of Digital Evolution with AvidaED and misconceptions and misapplications of the theory as with Eugenics. Project partners in research and pedagogy facilitators include the Suzuki Lab at the J.Craig Venter Institute, the Beacon Center at Michigan State University and the biology department at the University of San Diego.
Sculptures: Stories of Empowerment

Students re-tell poignant family stories using dance and visual data renderings set to music.

For many people, dancing is merely something you do with music for fun. For others it is a form of expression that allows them to physically communicate emotions and stories. What else does dance and music allow us to do? How can it be a form of resistance or protest? How can it be used to connect with others and to form a community? In this project we will be exploring these questions and more as we learn to tell stories through movement, sounds, and visuals. We will also be able to use this project to honor people in our community by celebrating their stories through our public performances.