Hebrew Day Institute

לכבוד שבת

L'chvod Shabbat

...where education, tradition, and caring go hand in hand.

October 20, 2006

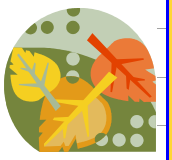
Science Explorations

By Sharon Turpie

Kindergarten
With all the holidays we've missed a lot of classes. We have continued learning about our five senses. We studied ears and hearing. We learned that sound is caused by vibrations. We did some experiments that showed that the faster something vibrates the higher the sound. We also made pan pipes, and played on a variety of instruments to test of vibrations and how they change pitch. We made ear-balloons to model how the ear detects vibrations.

First Grade
We began out next unit of study. Invertebrates are animals without backbones. We started with looking at hermit crabs. We read a book about them and examined shells to learn about their growth patterns. There are many, many different invertebrates and we had a lot of fun meeting some of them. There is no other category of animals that is so diverse and numerous.

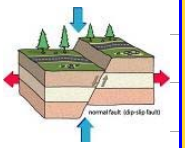
One thing that biologists do is classify animals into groups. The students had fun examining representatives from different phyla, subphyla and classes. They looked at their characteristics, similarities and differences to classify them. The students especially enjoyed taking measurements of worms. Of all the invertebrate classes, insects dominate our world. The students have enjoyed leaning about some orders of insects and look forward to learning more about them next month.



We began with butterflies and moths and their life cycles. With the changing of the seasons, we looked into the question of why trees change color in the fall and drop their leaves. We did a chromatography experiment and found that the colors were in the leaves all along but they were just covered up by the green pigment, chlorophyll.

Second Grade
We did some experiments to lean about how the complex structure of the Earth's crust is a result of vast amounts of geologic time. Volcanoes are generally classified into three types according to their general structure, shape and lava type. We learned about shield volcanoes, and strato volcanoes and composite volcanoes. We made volcano puzzles and the students asked lots of great questions about them.

We then took a 'field trip' to California to take some field measurements along the famous San Andreas Fault. Along this fault, two tectonic plates are sliding past each other. Sometimes the



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Keep in Mind

Calendar

October 31:
Picture Day

November 6:
Professional Day, no classes for students

November 7:
Parent-Teacher Conferences; Election Day, no classes for students

November 10:
Career Day

November 14:
Restaurant Night at Max's

Club Ed Friday Hours

On Fridays, Club Ed meets from the time school is dismissed (2:30 during early dismissal; 3:30 regular dismissal) until at least 1 hour before candle lighting on Fridays. Friday closing times are:

October 27 5:00 pm

November Through January CLUB ED CLOSES AT 4:00 pm on Fridays.

A charge of $1.00 a minute is administered for pickups made after closing.

The Club Ed phone number is: 301-649-6653.

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plates 'get stuck' as some points. The pressure builds up until the rock suddenly slips all at once. The students leaned about latitude and longitude so they could map some earthquake locations. Cities along fault systems are at risk.

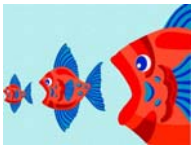
We tried our hand at being architects and tried to design earthquake-resistant buildings. Many coastal cities are built on reclaimed land which is sandy and unstable. During an earthquake liquidfaction can occur that makes buildings especially vulnerable. Special building designs can save tens of thousands of lives.

Third Grade

We began our study of meteorology by comparing weather and climate. Climate is what you expect; weather is what you get. Students learned about the five main climate types and where in the world each type is found. We live in a type C (temperate) climate. Students used their mapping skills to answer questions about climates. We also noticed that the world's climate types occur in bands of different latitude.

To find out why, we 'sent' teams to Brazil, New Zealand, and Antarctica to take temperature readings. The students gathered their data and charted it. We talked about how the sun's rays come in at different angles at different latitudes. We were able to show that the more direct the sun's rays the better they were at heating the earth's surface. This meant that the equatorial regions are heated more and the poles less. This generates the general climatic bands we noticed.

We then learned why we have seasons. Students learned to use protractors to measure the degree of the earth's inclination. They used protractors to mark the tropics of Cancer and Capricorn, the Arctic and Antarctic Circles. We also learned about the summer and winter solstice and the spring and fall equinoxes. Students then used this information to answer questions about seasons.



Fourth Grade

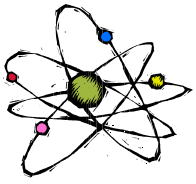
In fourth grade we have been learning how energy moves through a biome. The students constructed a food pyramid to show how animals at the top of the food chain are supported by animals on lower rungs. Scientist model how much biomass is needed to support higher predators and still maintain a healthy base population. We did some calculations showing how this information can be used to estimate a population even when it is impossible to get complete data.

Students tried to make a 'balanced' biome with enough lower animals and producers to maintain the population of each higher rung on the food chain. Animals and plants must compete for available resources. We then played a game which modeled deer population and showed how it is dependant on available resources. Thank you Mr. Thompson for helping us get the data.

The students then learned to make a graph to analyze the data from the experiment and see how the population responded. We also used the graph to calculate the carrying capacity of the land. Scientists agree that the organisms in an environment are dependant on each other. Scientists also are aware that there are many organisms at risk for extinction. World leaders and policy makers are making hard choices about what plants and animals to protect. No one knows how many can we afford to loose.

The students made some models of different environments to experiment with what would happen when organisms were wiped out. We found that those environments with more biodiversity were better able to withstand having organisms wiped. In each model, however, total collapse followed wiping out too many organisms.

Fifth Grade



We began by looking into the nature of matter with learning about four states of matter (we didn't study the fifth). Students learned about energy loss and gain as matter moves from one state to another and about latent heat. Students experimentally found the boiling point and freezing points of water. We have been learning about the physical properties.

Students devised methods of separating physical mixtures by taking advantage of their different characteristics. Another physical property is density. Students began a lab where they used Archimedes' principle to find out if Mrs. Turpie's jewelry was real or fake. Students weighed unknown samples, found the volume by displacement and calculated the density.

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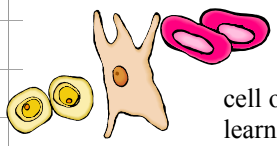
They then compared it to the density of known metals to determine if the samples were pure or not.

Sixth Grade



The sixth grade has been learning about cell processes, structure and the functions of cell organelles. We started with learning about cell membranes. Membranes are extremely important to cells; they are the boundary between life and the outside world and are the gate keepers to letting materials in and out.

Many cellular processes occur at membranes. We experimented with several processes by which materials can cross a cell membrane. We began by making a very simple 'membrane' with oil and water and discussed the phospholipids structure of cell membranes. Small molecules such as oxygen and carbon dioxide can cross by simple diffusion, water by osmosis. Larger molecules can be moved across with assisted diffusion and active transport which take energy. Large packets of materials can enter and exit through endocytosis and exocytosis.

The students conducted experiments using dialysis tubing to test the process of diffusion and osmosis across a semi-permeable membrane. Simple sugars are converted into atp by the process called respiration. Atp is the cell energy 'coin'. We did experiments where we measured the waste products and the energy released by this processes. Carbon dioxide is also a product of respiration. We began an experiment to study this.

Science Fair

Information packets for this year's Science Fair were sent home this week for students in Third through Sixth Grades. Please read through the packet and complete the steps on time. If you have any questions, please contact Mrs. Turpie.

In the tradition of ...

Joey's Tzedakah Box

As part of our Tzedakah Curriculum, students have been bringing tzedakah to school every Friday. In the month of September we collected at total of $305.30. So far, in October we have collected $200.10. Keep up the good work and please remember to bring tzedakah money every Friday.

The Jewish Federation of Greater Washington
DC • MD • VA
SUPPORTED AGENCY

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