

DECEMBER 2009



Your class can be involved in an experiment that's out of this world!

Tomatosphere is a curriculum based program for schools that involves your students in a germination experiment with sets of tomato seeds - a control group and a group that has been on the International Space Station for 6 months!

There are still seeds available that will be sent out in the spring (to be planted in spring of 2010).

Tomatosphere also provides detailed curriculum connections, student activities, assessment suggestions, videos, charts and graphs for the program, and both teacher and student background materials! All FREE of charge!

Tomatosphere also offers several units to supplement the basic germination experiment:

Grades 3 - 4: How to feed a Martian - a nutrition unit for trips to Mars!

Grade 6: Surviving on the Red Planet - Recycling breathable air.

Grades 7 - 8: The Martian Environment - A weather station on Mars.

Grades 9 - 10: The energy to survive - nutritional requirements for long duration missions (e.g. to Mars).

Sign up now at:

www.tomatosphere.org

The Science and Technology Hotline

OPERATION MINERVA AND OPERATION THOTH

The 18th annual Operation Minerva Conference is set for January 29th, 2010! Science teachers should have already received the registration forms for the students—if not contact Praxis as soon as possible. The deadline for participant registration is December 14th, 2009.

If you are not familiar with Operation Minerva—where have you been? Just kidding! Operation Minerva is a one day conference which allows grade nine girls the opportunity to job shadow a female professional in the science and technology field

in the morning and participate in a variety of hands on science and technology workshops in the afternoon. The Conference is an excellent opportunity to increase interest in science as well as increase the girls confidence. It is also an excellent way to build relationships with female professionals.

Praxis is currently in the planning stages of a new program called Operation Thoth. Operation Thoth is similar to Operation Minerva but is for grade 9 boys! Keep

your eyes peeled for more information regarding Operation Thoth—we are hoping for a start up date of April 2010.



Past Operation Minerva Participants

INSIDE EDUCATION - A GREAT RESOURCE FOR TEACHERS

I recently attended a workshop put on by Inside Education. For those of you who are unaware of Inside Education here is a little background;

Inside Education is a nonprofit registered charity that provides natural resources and environment education focused on forests, water, energy and related topics.

A yearly membership for Inside Education costs \$25 which gives you access to many professional development activities free of charge. Inside Education also provides a stipend to cover the cost of a substitute teacher! It's a win win situation. For more information check out their website at:

www.insideeducation.ca



ONLINE SCIENCE FAIR REGISTRATION IS OPEN!

Visit: <https://secure.ysf-fsj.ca/sfiab/kiwanissoutheastalberta/>

HOW DO MARINE MAMMALS STAY WARM IN COLD WATER?

Mammals are warm blooded creatures—just like us. This means (among other things) that their body temperature must remain constant even when the outside temperature fluctuates. So why can an animal such as a whale thrive in extremely cold, icy waters while us humans cannot? You guessed it! It's blubber! Marine mammals have a layer of fat (blubber) that helps it maintain an ideal temperature. In this experiment we are going to determine just how effective blubber (fat) is at insulating a sample of water.

Materials:

- 6 plastic cups (3 small and 3 large), the small cups must be able to fit into the large cups with a slight space in between.
- Thermometer,
- Large bowl, bucket or tray.
- Water,
- Ice,
- Vegetable shortening or lard (our source of blubber!)
- Salt or sugar.

Procedure:

1. The first step is to prepare our sample water—we want this to be room temperature—so fill a large container or bottle with tap water and let sit until it reaches room temperature.
2. We will be preparing three samples. The first sample is just a control—so take your small cup and place it inside the big cup and then fill the small cup with water. The second sample is our blubber samples. So add a small amount of shortening to the bottom of the big cup, then place the small cup inside and fill the space between the cups with shortening. You should be left with a nice layer of shortening separating the two cups. Fill the small cup with water. Repeat the last process one more time but this time use sugar or salt between the cups—this serves as another control.
3. Prepare an ice water solution in your large bowl and add the samples to the water. Be sure that the cup is not fully submerged. Add the thermometer to each sample and note the change in temperatures over a period of time. For example check the temperature every five minutes for half an hour and record your findings. If you only have one

thermometer do the samples one at a time.

4. What did you notice?

Explanation:

You should have noticed that the sample with the shortening did not decrease in temperature as fast as the other samples. The layer of fat acted as an insulator helping the animal retain its heat.

Another way you can experience this insulating factor is to put on a rubber glove and submerge your hand into the ice water, is it cold? It should be! Repeat this experiment but first coat your hand in shortening before putting it into the glove—your hand should feel much warmer this time!

Anyway, have fun with this! Keep in mind we don't have blubber to keep us warm, so wear your gloves, toques and coats!



ASTRONOMY KIT!

There have been several new additions to our Astronomy and Sky Science Kit—check it out!

There is also a ton of French content for those teaching immersion!

For all your science needs contact
Praxis

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THE CANADIAN CENTER FOR UNMANNED VEHICLE SYSTEMS

The Canadian Center for Unmanned Vehicle Systems is available for guest presentations for Junior High Students—if you are a teacher and would like your class to learn more about unmanned vehicles and robots then let Praxis know!



Founding Member of:



Don't forget you can always get an extra copy of the newsletter off our website, or we can email you the newsletter electronically.