WINTERTHUR

Safeguarding Our Classroom Treasures

This quick lab activity introduces students to preventive conservation, or how conservators adjust temperature and relative humidity in museums to prevent damage to objects.

To do this activity in your classroom, split your students into small groups and give each group an object from the classroom. Ideally, each group should work with a different kind of **object** – plastic, paper, wood, metal, etc. Example objects might include a metal ruler, printer paper, wooden desk, book, or plastic water bottle. Students can work independently in their groups using the attached **worksheet**, **"Environmental Conditions" chart**, **thermometers**, and the **Image Permanence Institute's online Dew Point Calculator** (dpcalc.org).

Regroup as a class after they finish their investigations to discuss what each group learned about their objects' preservation safety and what measures should be taken to safeguard your classroom treasures.

Please note: The first worksheet applies to schools ***without*** air conditioning or other climate control system; the second applies to schools ***with*** HVAC systems, because these systems will affect the relative humidity calculation in the lab. The "Environmental Conditions" handout should be used with both worksheets.

Name:

Date:

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1. What object was your group assigned? What is it made of? What are some properties of this material?

This object is important to our classroom collection, and we want to ensure its preservation! Because materials interact with environmental conditions like temperature and humidity, we need to assess whether our classroom environment will preserve or damage our object. Is it too humid here? Too dry? Let's use science to find out!

2. **Temperature:** use a thermometer to record the temperature in your classroom.

   Record **temperature** here: _____

3. **Dew point:** dew point is the temperature at which condensation will form. Use the internet to find out what the dew point is in your town today.

   Record **dew point** here: _____

4. **Relative humidity:** use the online Dew Point Calculator (dpcalc.org). Slide the temperature and dew point to reflect your findings above. The calculator will determine what the relative humidity in your classroom is. Make sure you click to solve for "% RH."

   Record **relative humidity** here: _____

5. In the online Dew Point Calculator, look to the right. What is your preservation evaluation? What is at risk for your object? Be sure to consult the Environmental Conditions chart!

6. Try different values in the Dew Point Calculator. How might the classroom environment be modified to better safeguard your classroom treasure?

Name:

Date:

Safeguarding our Classroom Treasures

1. What object was your group assigned? What is it made of? What are some properties of this material?

Imagine that we are creating an outdoor exhibit on life in our classroom. This object is important to our classroom collection, and we want to ensure its preservation outside! Because materials interact with environmental conditions like temperature and humidity, we need to assess whether the outdoor environment will preserve or damage our object. Is it too humid here? Too dry? Let's use science to find out!

2. **Temperature:** use a thermometer to record the temperature outside.

   Record **temperature** here: _____

3. **Dew point:** dew point is the temperature at which condensation will form. Use the internet to find out what the dew point is in your town today.

   Record **dew point** here: _____

4. **Relative humidity:** use the online Dew Point Calculator (dpcalc.org). Slide the temperature and dew point to reflect your findings above. The calculator will determine what the relative humidity in your classroom is. Make sure you click to solve for "% RH."

   Record **relative humidity** here: _____

5. In the online Dew Point Calculator, look to the right. What is your preservation evaluation? What is at risk for your object? Be sure to consult the Environmental Conditions chart!

6. Try different values in the Dew Point Calculator. How might the classroom environment be modified to better safeguard your classroom treasure?

Environmental Conditions

Material	Temperature	Relative Humidity
Metals	20±2°C	<35% RH
Stone	20±2°C	50±10% RH
Glass	20±2°C	50±10% RH
Enamels	20±2°C	50±10% RH
Ceramics	10-30°C	20-60% RH
Paintings	20±2°C	50±10% RH
Furniture	20±2°C	50±10% RH
Asian lacquer	20±2°C	50±5% RH
Organic materials: Bone Ivory Horn Leather Tortoiseshell Feathers	 20±2°C 20±2°C 20±2°C 20±2°C 20±2°C 20±2°C	 45-65% RH 50±10% RH 50±10% RH 50±10% RH 50±10% RH 50±10% RH
Textiles	20±2°C	50±5% RH
Paper and books	20±2°C	50±10% RH
Watercolors	20±2°C	50±5% RH
Gouache	20±2°C	50±5% RH
Plastics	20±2°C	50±10% RH