Effort Less Practical Strategies for Science
Mini-notebook

Copy and Assembly Instructions

Copy all pages on 8.5” X 14” paper

Copy the cover page on the back side of page 1/18
Copy page 2/17 on the back side of page 3/16
Copy page 4/15 on the back side of page 5/14
Copy page 6/13 on the back side of page 7/12
Copy page 8/11 on the back side of page 9/10

Stack pages so they will be in numerical order when pages are folded along the center line to make a booklet.

Fold along the center line.
Staple along the center line optional

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Science Notebook

Effort
Less
Practical
Strategies for Science
## Science Unifying Concepts Questions

<table>
<thead>
<tr>
<th>Systems</th>
<th>Energy</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What parts are in this system?</td>
<td>1. What is energy?</td>
<td>1. Why/how is this model useful?</td>
</tr>
<tr>
<td>2. How do the parts interact?</td>
<td>2. How was energy used in what you observed?</td>
<td>2. How is the model similar to what it is representing?</td>
</tr>
<tr>
<td>3. What is the function of the system?</td>
<td>3. Where did the energy come from and go to?</td>
<td>3. How is the model different from what it is representing?</td>
</tr>
<tr>
<td>4. What are the essential and non-essential parts of the system?</td>
<td>4. Did the energy change forms? From what to what?</td>
<td>4. What does this model show?</td>
</tr>
<tr>
<td>5. Name parts of the system and tell how the system would change if these parts were removed.</td>
<td>5. How do you know that energy was involved?</td>
<td>5. What are the limitations of this model? What does it not show?</td>
</tr>
<tr>
<td>6. Explain how this system interacts with other systems.</td>
<td>6. What evidence do you have?</td>
<td>6. How could the model be improved to better able to represent this science concept?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change</th>
<th>Properties &amp; Patterns</th>
<th>Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Give examples of different types of change.</td>
<td>1. What is a property?</td>
<td>1. Give examples of different types of survival.</td>
</tr>
<tr>
<td>2. What changes did you observe?</td>
<td>2. What properties of objects or events did you observe?</td>
<td>2. What factors determine whether or not something survives?</td>
</tr>
<tr>
<td>3. What caused the changes?</td>
<td>3. What properties make the object or event you observed different from anything else?</td>
<td>3. What survived in this example?</td>
</tr>
<tr>
<td>4. Describe the rate of change.</td>
<td>4. How can properties be used to find patterns?</td>
<td>4. What interactions were necessary for survival to occur?</td>
</tr>
<tr>
<td>5. How could the rate of change be made faster or slower?</td>
<td>5. What patterns did you observe?</td>
<td>5. Why was survival important in this example?</td>
</tr>
<tr>
<td>6. What did you observe that stayed the same?</td>
<td>6. How can patterns you observe help you to make predictions?</td>
<td>6. How can you predict whether or not survival will occur?</td>
</tr>
</tbody>
</table>
Demonstrate, model & use many ideas for entries

Benefits of Working Cooperatively

• Give students harder work but let them work together more often
• In small cooperative groups students:
  – learn from each other
  – justify & explain their ideas to each other
  – hear & use more vocabulary
  – are more engaged
  – feel more at ease
Ways to Scaffold the Learning

Demonstrate, model & use many ideas for entries

Ways to show what you know in your Science Notebook

Photos

Technical drawings

Diagrams to label

Samples from investigations

I predict
(will happen)
because

Investigation questions?
Can be answered by working with materials
Not
Must be answered by research or investigation

Foldables
Resources for Notebooking

www.nsta.org – numerous books and journal articles about science notebooks/journals


Science Notebooks, Writing About Inquiry, Brian Campbell and Lori Fulton, 2003

Using Science Notebooks in Elementary Classrooms, Dr. Michael Klentschy, 2008

Using Science Notebooks in Middle School Classrooms, Dr. Michael Klentschy, 2010

www.sciencenotebooks.org

Linking science, reading, writing, communication, and mathematics in K-12 classrooms

- Notebook features
- Student work
- Classroom tools
- Teacher resources
- FAQ

Tic-Tac-Toe
Weathering Investigation

Materials you will use:
- sugar cube
- bouillon cube
- paper plate
- black card
- dropper
- timer
- journal

Instructions:
- Place the paper plate in the center of the table.
- Place the black card on the plate near one side.
- Place the sugar cube on the black paper.
- Unwrap the bouillon cube and place it on the opposite side of the plate. Throw the wrapper away.
- Describe and record the similarities and differences in the properties of these two cubes.
- Each cube is being used as a model to demonstrate the effect of weathering on different types of rocks.
- Decide which team member will be the timer during your observations and have them practice using the timer BEFORE you start.
- Carefully place ONE drop of water on the top center of each cube. Water is the most common weathering agent.
- Observe for 30 seconds.
- Continue adding ONE drop to the same place on each cube at 30 second intervals for 5 minutes.
- Sketch what you observed in your journal.
- Label where you see evidence of:
  - Dissolving
  - Erosion
  - Flow
  - Deposition

How do the properties of the model “rocks” affect their rates of weathering?

Generalization

What statement can be made about how quickly changes caused by weathering will be noticeable or measureable?
Questions to ask when using model materials

Evaluate the model.

What are its limitations (weaknesses)?

How is it similar to and different from what it is representing?

How could it be improved?

Hands-on Experiences

Provide common background experiences for all students to build upon.

Provide opportunities for student-to-student dialogue enhancing literacy.
<table>
<thead>
<tr>
<th>Forces That Change the Landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example of landform changes (picture card)</td>
</tr>
<tr>
<td>Forces/Factors that caused the changes (word cards)</td>
</tr>
<tr>
<td>Explain if the changes are constructive or destructive and why</td>
</tr>
<tr>
<td>Explain if the changes occur quickly or slowly</td>
</tr>
</tbody>
</table>
Resources


Science for English Language Learners, Ann F. Fathman and David T. Crowther, Editors, www.nsta.org


Supporting Science, Inc., www.sciencecutups.com