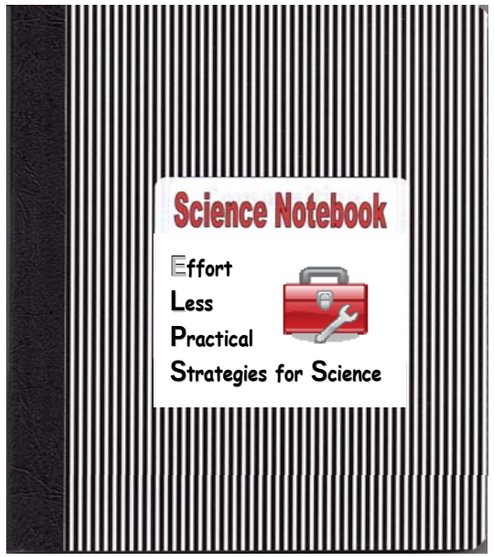
Effort Less Practical Strategies for Science Mini-notebook



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

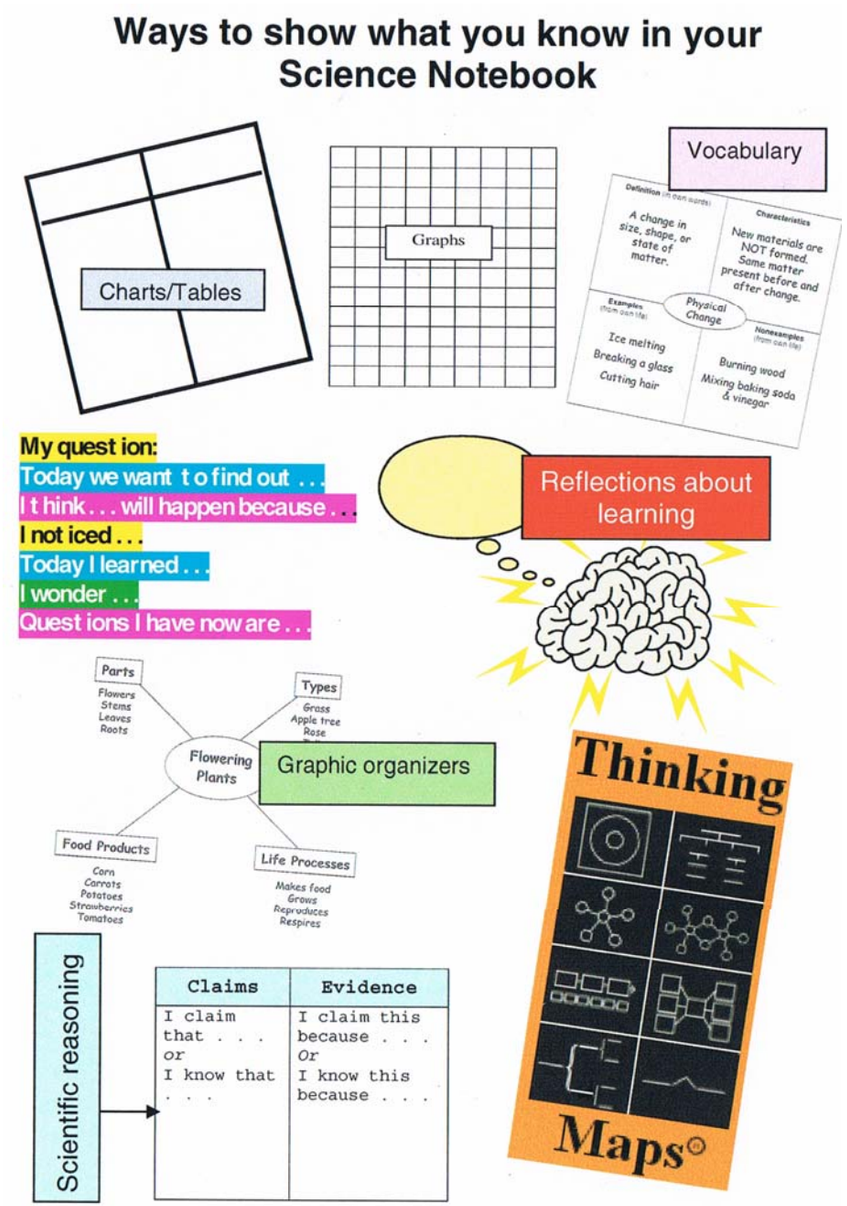
Practical

Strategies for Science

Science Unifying Concepts Questions

Systems	Energy	Models
1. What parts are in this system? 2. How do the parts interact? 3. What is the function of the system? 4. What are the essential and non-essential parts of the system? 5. Name parts of the system and tell how the system would change if these parts were removed. 6. Explain how this system interacts with other systems.	1. What is energy? 2. How was energy used in what you observed? 3. Where did the energy come from and go to? 4. Did the energy change forms? From what to what? 5. How do you know that energy was involved? 6. What evidence do you have?	1. Why/how is this model useful? 2. How is the model similar to what it is representing? 3. How is the model different from what it is representing? 4. What does this model show? 5. What are the limitations of this model? What does it not show? 6. How could the model be improved to better able to represent this science concept?
Change	**Properties & Patterns**	**Survival**
1. Give examples of different types of change. 2. What changes did you observe? 3. What caused the changes? 4. Describe the rate of change. 5. How could the rate of change be made faster or slower? 6. What did you observe that stayed the same?	1. What is a property? 2. What properties of objects or events did you observe? 3. What properties make the object or event you observed different from anything else? 4. How can properties be used to find patterns? 5. What patterns did you observe? 6. How can patterns you observe help you to make predictions?	1. Give examples of different types of survival. 2. What factors determine whether or not something survives? 3. What survived in this example? 4. What interactions were necessary for survival to occur? 5. Why was survival important in this example? 6. How can you predict whether or not survival will occur?

Demonstrate, model & use many ideas for entries

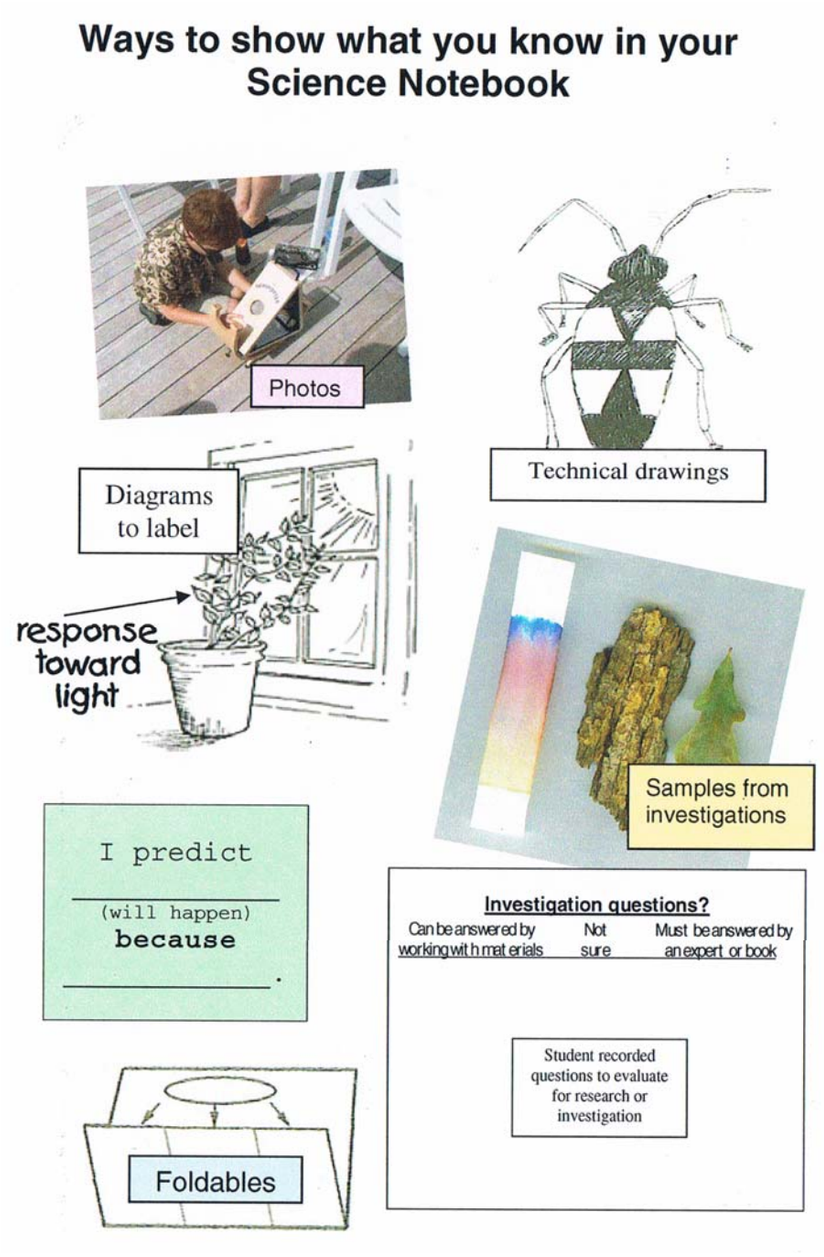


Benefits of Working Cooperatively

- **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



Resources for Notebooking

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

The Biology Teacher's Handbook, 4th Edition, BSCS, 2009

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

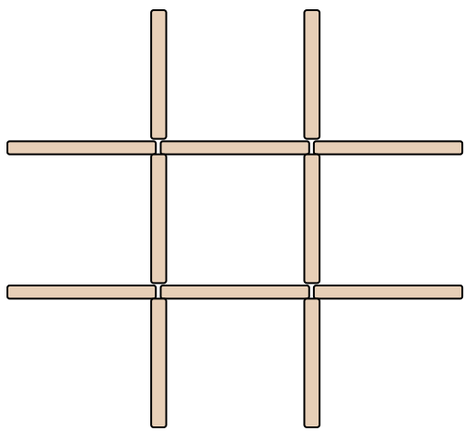
www.sciencenotebooks.org

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

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

. . . let me count the ways

Tic-Tac-Toe



Weathering Investigation

Materials you will use:


sugar cube


bouillon cube


paper plate


black card


dropper


timer

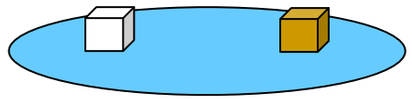

journal

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?

Weathering Investigation Observations

Describe the similarities and differences in the properties of the two cubes.



Sketch your observations. Label where you see evidence of: **12**

- **Dissolving**
- **Erosion**
- **Flow**
- **Deposition**

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.

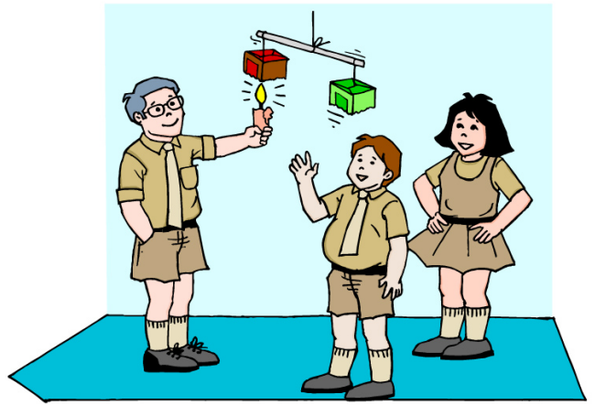
What are its limitations (weaknesses)?

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.

Ways to Use Process Skills

Forces That Change the Landscape

Example of landform changes (picture card)	Forces/Factors that caused the changes (word cards)	Explain if the changes are constructive or destructive and why	Explain if the changes occur quickly or slowly

Teaching Vocabulary . . .

Ways to Organize Information

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2010 STELLAR Summer Institute
San Marcos, TX

Resources

Caldecott Connections to Science, Shan Glandon, 2000, www.lu.com

Classroom Instruction That Works, Robert J. Marzano, Debra J. Pickering and Jane E. Polluck, 2001, www.ascd.org

Classroom Instruction That Works with English Language Learners, Jane D. Hill and Kathleen M. Flynn, 2006, www.ascd.org

Dinah Zike's Notebook Foldables for Spirals, Binders & Composition Books, Dinah Zike, 2008, www.dinah.com

More Picture-Perfect Science Lessons, Karen Ansberry and Emily Morgan, 2007, www.nsta.org

Navigating the ELPS in the Science Classroom, John Seidlitz and Jennifer Jordan-Kaszuba, 2010, www.seidlitzeducation.com

Picture-Perfect Science Lessons, Karen Ansberry and Emily Morgan, 2005, www.nsta.org

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

Science Formative Assessment, 75 Practical Strategies for Linking Assessment, Instruction, and Learning, Page Keeley, 2008, www.nsta.org

Supporting Science, Inc., www.sciencecutups.com

Teaching Reading in Science, Mary Lee Barton, Deborah L. Jordan, 2001, www.ascd.org