The Interactive Science Notebook
Your New Best Friend!
Unlocking Science Success
I was absent last week, did I miss anything?

I can’t find my notes, homework, old quizzes...
I’m sure it’s in my book bag...
I can’t remember what we did in class yesterday...

I can’t find my locker...

Have you ever heard yourself say.
Well Here's Your Answer..

Interactive Science Notebook
Interactive Science Notebook (ISN)

- Your own personalized DIARY of learning about science
- A portfolio of your work in ONE convenient spot. This is great for studying for upcoming quizzes & tests
- A great ORGANIZATIONAL tool that gives you permission to be PLAYFUL AND CREATIVE in your responses without "messing up" your notes.
- Allows you to work like a REAL SCIENTIST!
What are Interactive Science Notebooks?

- A student thinking tool
- An organizer for inquiry questions and what I learned...
- A way to access and process the learning utilizing various modalities (writing, drawing, and discussion)
- A place for writing rough drafts based on hands-on learning
- A formative assessment tool for teachers
Interactive Science Notebook (ISN) Guidelines

SCIENCE INTERACTIVE NOTEBOOK will increase your understanding of science by:

- using writing as a process for discovery and synthesis of inquiry.
- modeling many enduring functions of scientists – recording information, data, and experimental diagrams.
- improving your ability to organize ideas and information to provide a study reference for each unit, as well as a resource to consult for review for tests, and even in high school as you sequence into Earth Science, Chemistry, Ecology, Biology, and Physics.
- demonstrating to your teacher and parents your developing organizational skills, understanding of science concepts and ability to express thoughts and feelings in a variety of ways.
- deepening the science skills acquired in prior years by application to 8th grade science.
“In a nutshell”...

What is the rationale for using interactive science notebooks?

- Improve organization skills
- Improve critical thinking skills
- Express understanding creatively
- Record data
- Study for tests
- Record progress
- Communication

Notebooks help us learn!
Research shows that student understanding and literacy skills improve when students do hands-on minds-on science and use science notebooks to make sense of their science investigations.
The Interactive science notebook is an effective teaching strategy because it turns student notebooks into meaningful and personalized records of learning.

*Think as a scientist... record as a scientist... and reflect as a scientist!*
October 1: Yesterday Nemaye found Group 4 in the middle of the wide slopes before Shallow Slopes under a large Euphorbia at that point. We found their track descending across our path in needles and went higher, to edge of Shallow Slope to make sure it had been their track before returning near Kunguka tree to descend into needles to find last night’s nests. They were spread out over 130’ with U.B. nestled near Papoose, (some 4’ off ground) and Simba in little nest by his side and all under shelter of Euphorbias. It had pored rain the previous night. In our way we had found tracks on our trail beneath. The biggest puzzle was the finding of a female’s nest with infant dung of a cow and a half, or approximately less than 2 months. The dung and nest appeared to be only one day older than the other nests, but that’s not certain. My final conclusion is that Kaisie has given birth even though the nest that must have been Season’s didn’t have large enough dung in it. The trail then went into the Hypericums and up onto the base of Nobby Man’s Ridge. We saw the group feeding on the opposite slopes — i.e., Ambassador’s Ridge. At 8:30 I did not take notes for the first half-an-hour in hopes of locating Old Coast to see if she had an infant or if Kaisie had rejoined the group. During that time, U.B. was in a huddle with Simba, Papoose, Tiger and Augustus near my Petula next. Plesie and Cleo slightly below on log with Plesie feeding. Old Coast to left of my screen with Digit above her — both the furthest animals from the group bulk. There was g stringing between U.B. and Pet. and Papoose and play with youngsters. My notes begin at one o’clock. Old Coast moves into day nesting spot high above group which had in part been feeding up until now (semi-sun.) Tiger at first leaves than she but also my same time settles into day nest spot. U.B. self-grooming an inverted lobelia top which served as his nest at this time. Cleo laying on Papoose with Augustus between them and U.B. Plesie—eating a few feet further on (she had climbed up to group huddle with Cleo playing behind her with foliage. Tiger uphill from her about 6’ only apart from his mother a good 150’ and Simba is above him some 6’. One animal heart coughs a great deal. Digit moves off uphill and Tiger moves uphill to feed before Plesie approaches him with Cleo dorsal and takes over Tiger’s nest. He only moved a few feet away and looked at her with a grin expression — open mouth and playful. Cleo goes directly over to Tiger and plays on his lap for a mild play session. Simba moves away from them at this point. Simba then further uphill alone and feeding. Papoose and Petula still lying still. After some 15 minutes Cleo goes uphill with Cleo grabbing onto her neck and lying half-dorsal as she moves off. Plesie follows Simba’s route. U.B. “again” grooming Papoose. Petula, above them, sits up as though thinking about feeding. Cleo up with Plesie lacking a small Vernonella sapling for play and feeding. U.B. still grooming Papoose’s rump. Plesie feeding at 6:10 U.B. occasionally looking over in her direction very intently. Tiger and Simba begin tussling together quite strenuously with Simba holding her own well. U.B. still self-grooming at 6:17. Cleo swinging above with a smile from a small Vernonella. Tiger and Simba still tussling at 6:20. U.B. wearing his soppy expression all day long. Such group harmony in evidence today despite overcast and eventual rain. Tiger and Simba next shag. Below Petula is huddled over Augustus grooming him. At 6:21 Tiger and Simba
Left Side? Right Side? What Goes Where?

**Left Side**

Student Output
Lots of Color
The brain remembers things in color better.

- Concept Maps
- Drawings
- Reflective Writing
- Questions
- Data and Graphs
- Songs
- Poems
- Data from Experiments
- Cartoons or cartoon strips
- Foldables

**Right Side**

Teacher Input/Content
Blue or Black Ink/pencil

- Information given in class
- Lecture Notes
- Informal Lab Activities
- Video Notes
- Summaries
- Textbook Notes
- Procedures for experiments
- Classroom Specific Information
To review...the notebook is divided into TWO sections.

- The **Right Side** is for **input**. This is the side that holds information that I give you.

- The **Left Side** is for **output** and contains only your reflections about what you have learned. It should be full of color, and it’s the side where you can get **creative**.
The notebook is divided into TWO sections.

LEFT side “loves” STUDENT work = OUTPUT

RIGHT side is “restricted” to TEACHER INPUT

WARMUP #1 Fill in the missing word.

Decomposer Producer Consumer

Plants are ____. Lions, tigers, and bears are ____. Worms and mushrooms are ____

For example, a simple food chain might be the sun, grass, mouse, fox, and maggots. In this food chain what is the producer? What is the decomposer? What is the source of energy? This food chain is part of a larger food web. Can you see that changing the mouse to a rabbit makes a different food chain but in the same food web? What other chains in this food web could we create? Can you identify which are primary/secondary consumers, producers, and decomposers?
The **RIGHT SIDE** should contain information given from Ms. Abrams while we are learning new material. Nothing else should be placed on this page!

- The **RIGHT SIDE** contains all the TESTABLE material.
– Teacher guided PowerPoint notes
– Movie/Video
– Article Readings
– Textbook
– Handouts
The LEFT SIDE belongs to you.
Let your CREATIVITY go wild!
The LEFT side loves color.
The day’s activity is placed on the LEFT or OUTPUT side of the notebook. This section acts as a reinforcement and processing for the RIGHT or LEARNING side.
Examples of Left Side Assignments

- Graphic Organizers  Diagrams/Visual Illustrations
- Poems, Song Lyrics  Cartoons/Comics
- Lab Analysis  Advertisements
- Brainstorming  Mind maps
- Concept maps  Venn diagrams
- Pictures  Drawings
- Diagrams  Writing prompts
- Flow charts  Homework  Songs
- Open ended worksheets  Self reflections
- Labs  Quizzes, tests
- Mnemonic device  Foldables
- Vocab. Cartoons  Charts & graphs
- Write a newspaper article about notes
- Write a letter or postcard from a famous scientist

YOUR OPPORTUNITY TO BE AS CREATIVE AS YOU WANT TO BE
What are graphic organizers?

- Graphic organizers are one way for visual thinkers to arrange their ideas. There are unlimited ways to express these visual ideas.
- Graphic organizers have many names including visual maps, mind mapping, and visual organizers.
- Although many students plan with paper and pencil, technology tools can be very helpful because they allow easy editing.
- Graphic organizers can be used as a nice planning tool from information identification to product development. Finally, they are great for visual thinkers or those that need to practice their visual thinking.

Why use graphic organizers?

- Organizers are a way to encourage students to think about information. With graphic organizers, you remove the words and focus on the connections.
Examples of Graphic organizers

Fishbone
How the fishbone might be used
Wheel Diagram
<p>| | | |</p>
<table>
<thead>
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</tbody>
</table>

**TicTac Toe**
GRAPHIC ORGANIZERS

**Renewable Resources**
- Plants
- Animals
- Water
- Oxygen
- Soil
- Can be replaced within a human life time
- People use them
- Are sources of energy
- Cannot be replaced quickly
- Need years and years to replace

**Nonrenewable Resources**
- Oil
- Natural gas (fossil fuels)
- Coal
- Minerals
- Cannot be replaced
- We should use them together to protect the environment
- These (same as my dad's car)
- This type of energy people cannot use up
- Solar energy (Sun)
- Ocean water
- Wind

**Inexhaustible Resources**

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**Diagram:**
- **p+**
- **n0**
- **e-**
- Shared aspect
- Mass
- Charge
- Mass change (never changes)
- Mass change changes when the atom is neutral
- Mass increase
- Mass decrease
- Found by observation
- In nucleus
- Bound by strong force
- In electron
- Mass decrease (changes)
- Mass increase (changes)
- Found by observation
- **p+**, **n0**
The City

- Roads
- Buildings
- Parks
- Schools
- Hospitals

Connections:

- Home
- Work
- Shopping
- Recreation

Life in the City:

- Commuting
- Shopping
- Dining
- Entertainment

The city is a hub of activity, with various connections and services available.

Diagram shows a simple layout of a city with roads, buildings, and points of interest connected by pathways.
Moon Phases/Cycles

I know the moon looks different, but I don't know why or when it changes. I learned about the words full moon (all the moon shows), half moon (only half shows) and a crescent moon (only a little shows).

Moon Notes:
- The moon rotates around the earth.
- One side of the moon always faces the sun.
- We see different "moons" because our position around the sun changes, which changes the light of the moon as the sun hits it.
- The moon does not make (produce) its own light.
- The phases or positions of the moon we see depends on where the moon, sun, and earth are.
- There is a new moon (can't see it), first quarter, full moon, and third quarter (half moon).

Facts of a gas:
- The particles move fast and away from each other.
- The temperature.

Facts of a liquid:
- The particles of a substance are farther apart and slide by each other (it can cling)
- The molecules move faster.
- The temperature increases.
- Molecules take the shape of their container.
- Liquids are denser than a gas.

Facts of solids:
- Particles are close together.
- Molecules move slow.
- The temperature of the substance decreases.
- The substance contracts.
- A solid keeps its shape and volume.
- The particles are locked together.
Complete Metamorphosis

Egg → Larva → Pupa

3 Kinds of Natural Resources

[Text on the right side is partially obscured and not legible]
Example of Left Side Learning

Natural Resources

A Natural Resource is a material that is useful to people that comes from our environment.

To me, a natural resource is something we get from our earth to make things or to use energy. We get our natural resources from our trees and plants, water, fossil fuels, wind, and the sun.

Renewable vs. Non-renewable

Biomass

Wind Energy

Solar Power

Geothermal

Hydropower

Fossil Fuels: Oil, Natural Gas, Coal
Example of Left Side Learning

1. Experimental Design
   Dependent Variable: Growth
   The variable observed and measured.
   - Soil
   - Plants

2. Independent variable: Water
   The variable that is changed or controlled in an experiment.
   - Watered
   - Unwatered

3. Dependent variable: Height
   Measurement of the effect of the independent variable.
   - Seeds
   - Height

4. Repetition of trials
   Repeating experiments to increase the reliability of the results of an experiment.

5. Constants
   Things in an experiment that stay the same throughout the experiment.
   - Type of soil
   - Sunlight
   - Water
**Timeline of Microscopes**

1665

First Compound Microscope

A microscope that was a tube with a lens on each end and created by Hans Janssen and Hendrick.

1683

**Scanning Electron Microscope**

SEM can magnify up to 1,000,000 times. Created by Ernst Abbe and Carl Zeiss.

1896

Modern Compound Light Microscope

A microscope that allows you to focus light on a sample, allowing you to magnify up to 2000 times. Created by Ernst Abbe and Carl Zeiss.

1932

Transmission Electron Microscope

SEM can magnify on rough 500,000 times. Created by Ernst Ruska and Max Knoll.

1981

Scanning Tunneling Microscope

STM can magnify on molecules, allowing the view of molecules up to 1 nanometer.
For REFLECTION you can use guiding prompts:

What are you curious about?
What would you like to test?
What was the main idea?
What are the important details to remember?
How does this relate to your life?
What don’t you understand?

REFLECTION can guide your communication with others which will deepen your understanding!
Example of **Left and Right Side Learning**

**The Electromagnetic Spectrum**

There are seven waves in the EMS, and they are the 2nd most powerful type of radiation. The human eye can see visible light. Ultra Violet rays cause sunburn; heat waves are also called Infra Red. Antenna name for white light is visible light. White light can be split into 7 colors. You can remember the colors by saying Roy G. Biv.

The video answered my questions. The best part of the video was when they explained the Northern Lights and what causes them. The worst part of the video was when I liked the whole thing. I didn’t find a bad part. One other thing I will really remember from this video was that the funny scientist named Dr. Z. I thought he was funny.

A new title for the video could be "Electromagnetic Energy: What is it?"

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**Electromagnetic Spectrum Video Notes**

Name: Tina Plagens  Date: 9-19-07  Class: 2 3 4 5 6 G

1. The order of the EMS from shortest to longest waves is:

   a. **Radio waves**
   b. **Microwaves**
   c. **Infrared**
   d. **Visible Light**
   e. **Ultra Violet**
   f. **Ultra Violet**
   g. **X-rays**

2. Heat waves are also called **Infrared** and **Red**.

3. The doctor uses **X-rays** to look at your bones. These are the second most powerful type of radiation.

4. These high-energy/short wavelength waves can cause sunburn, even on cloudy days. They are **Ultra Violet** and **Violet**.

5. This is the part of the electromagnetic spectrum that the human eye can see. It is known as **Visible Light**.

6. White light, the other name for the above type of radiation can be split into 7 colors. These colors are:

   - Red
   - Orange
   - Yellow
   - Green
   - Blue
   - Indigo
   - Violet
Many thanks to these wonderful teachers for creating wonderful POWERPOINT slides from which I worked from:
- Barbara Zimmerman, adapted from her original presentation
- Annette Holder, rockin’ Science
- Doug Saunders, bringing History Alive!