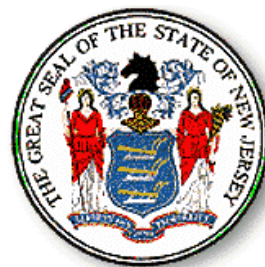ORANGE
PUBLIC SCHOOLS
ORANGE, NEW JERSEY

Ronald C. Lee,
Superintendent

SY2013 - 2014

BULLETIN

Science Notebooks

Science notebooks contain information about the students' classroom experiences and are used much as scientists would, before, during, and after all investigations. They are a place where students formulate and record their questions, make predictions, record data, procedures, and results, compose reflections, and communicate findings. Most importantly, notebooks provide a place for students to record new concepts they have learned.

1. Students in grades K-7 are required to maintain science notebooks making routine entries.
2. Notebook writing is viewed as a critical aspect of science teaching and learning. It has the potential to inform the teaching and assess the learning.
3. Science notebooks contain information about the students' classroom experiences and are encouraged to use them as scientists would, before, during, and after all investigations. They are a place where students formulate and record their questions, make predictions, record data, procedures, and results, compose reflections, and communicate findings. Most importantly, notebooks provide a place for students to record new concepts they have learned.
4. The Science Department will conduct random sampling of student notebooks and, when necessary, provide examples of best practices in notebook maintenance.
5. Sample science notebooks are available through the Master Science Teachers and/or the Science Department.

Science Notebook Organization
Students should use organizational elements to streamline access to the contents of their notebooks over time to support their learning. As teachers consider what elements of a science notebook are most appropriate to meet their student learning goals and needs in science, they will need to exercise their own professional judgment as to which organizational elements support those goals. Formats for each organizational element vary depending on grade level and purpose, but should include some of the following components:

Cover Page
Recording this information enhances student understanding of common text features that support the development of literacy skills. Common elements on a title page or notebook cover may include:

- Student name
- School
- Teacher name
- Class

First Page
Students should generate a "Science Is… page' that expresses their thoughts or feeling towards Science. Examples for this page would be; student interpretation/drawing of a scientists, picture and or poems about science, etc.

Table of Contents
A table of contents allows a student to easily retrieve work from previous lessons within the unit. Teachers can create a template for students to fill in (e.g. blank template or transparency, list of activities with place to enter page number and date). Alternatively students can create the table of contents themselves. Common elements of a table of contents may include:
- Date
- Title of activity
- Page number
- Initials

Organization of Individual Pages
These features allow students to organize their work and more efficiently access learning from prior activities or lessons. These features also assist the teachers in assessing student understanding. Common organizational features include:
- Page numbers
- Date
- Activity title/question
- Headings (e.g. focus question, hypothesis, observations, results, conclusions)
- Time (e.g. time observations made, elapsed time for activity)
- Appendix (e.g. equations, formulas)

Glossary
Vocabulary words acquired while engaged in a hands-on lesson contribute to the development of scientific literacy. A glossary is one approach to building understanding of scientific terminology, while also advancing learning of text features. Recording and highlighting new vocabulary as the words are encountered in the unit is an alternative to the use of a glossary. Some strategies for constructing glossaries include:
- Create and use a separate science glossary (back of notebook)
- Use a student created spelling or writing dictionary (back of notebook)
- Teacher gives words, students adds own picture and definition (grades K-2)
- Teacher creates glossary based on input from children (grades K-1)
- Create word wall as class, students add these words to word bank in their notebooks
- May include scientific terminology and/or words that are important to know within the context of a test question or activity (e.g. compare, contrast, formation)

Science Notebook Entry Types

Entry Type	Definition and Purpose
Drawings	*Definition* Student generated drawings of materials, scientific investigation set-up, observations, or concepts. Three common types of drawings used in science notebooks include: 1. Sketches: Informal pictures of objects or concepts created with little detail. 2. Scientific Illustrations: Detailed, accurate, labeled drawings of observations or concepts. 3. Technical Drawings: A record of a product in such detail that someone could create the product from the drawings.

	Purpose Students use drawings to make their thinking and observations of concrete or abstract ideas visible. Drawings access diverse learning styles, allow entry to the writing process for special needs students and emergent writers, and assist in vocabulary development (e.g. oral explanations, group discussions, labels).	
Tables, Charts, and Graphs	*Definition* Formats for recording and organizing data, results, and observations.	
	Purpose Students use tables and charts to organize information in a form that is easily read and understood. Recording data in these forms facilitates record keeping. Students use graphs to compare and analyze data, display patterns and trends, and synthesize information to communicate results.	
Graphic Organizers	*Definition* Tools that illustrate connections among and between ideas, objects, and information. Examples include, but are not limited to, Venn diagrams, "Box–and-T" charts, and concept maps.	
	Purpose Graphic organizers help students organize ideas to recognize and to communicate connections and relationships.	
Notes and Practice Problems	*Definition* A record of ideas, observations, or descriptions of information from multiple sources, including but not limited to direct instruction, hands-on experiences, videos, readings, research, demonstrations, solving equations, responding to guiding questions, or developing vocabulary.	
	Purpose Students use notes and practice problems to construct meaning and practice skills for current use and future reference.	
Reflective and Analytical Entries	*Definition* A record of a student's *own* thoughts and ideas, including, but not limited to initial ideas, self-generated questions, reflections, data analysis, reactions, application of knowledge to new situations, and conclusions.	
	Purpose Students use reflective and analytical entries to think about scientific content from their *own* perspective, make sense of data, ask questions about their ideas and learning processes, and clarify and revise their thinking.	
Inserts	*Definition* Inserts are artifacts placed within a notebook, including, but not limited to photographs, materials (e.g. flower petals, crystals, chromatography results), and supplemental readings (e.g. newspaper clippings).	
	Purpose Students use inserts to document and to enrich their learning.	
Investigation Formats	*Definition* Scaffolds to guide students through a controlled investigation, field investigation, or design process. Examples include, but are not limited to investigation planning sheets or science writing heuristics.	
	Purpose Students use investigation formats to guide their thinking and writing while they design and conduct investigations. Students also use these formats to reflect on and discuss their findings and ideas.	
Writing Frames	*Definition* Writing prompts used to focus a student's thinking. Examples include, but are not limited to, "I smelled…I felt…I observed…","My results show…", "The variable I will change is…", or "I think that because…".	
	Purpose Students use frames to organize their ideas, prompt their thinking, and structure their written response. Frames help students become more proficient in scientific writing and less reliant upon the prompts.	