Transitioning to New Science Standards:
Targeted Support for Elementary Teachers (Day 3)

ADE State Initiated Professional Development
Presenter(s) Name(s)
Location where PD is delivered

Date PD Occurred

Revisit Norms/Housekeeping

Gots and Needs

Guiding Question for the PD

How will current instruction change to align with Arkansas K-12 Science Standards and Common Core State Standards, allowing students to deepen their understanding of science phenomenon and increase college and career readiness?

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Goal for the Day

Use strategies designed to elicit productive student thinking to better support students in understanding and making sense of science phenomena.

The Work of a Scientist

- Review the posters around the room.
  - What do you observe about the entries?
  - What types of entries do you notice?
  - What do you think was the purpose of the entries?

Science Notebooks

A Tool for Student Thinking

Taking Science To School

All major aspects of inquiry, including managing the process, making sense of data, and discussion and reflection on the results, may require guidance.

In the absence of instruction or prompts, students may not routinely ask questions of themselves such as What are you going to do next? What outcome do you predict? What did you learn? How do you know?

(NRC, 2007)

Science Notebooks

Essences of Thinking

Review Student Notebook Entries

- Flag areas where you see signs of student thinking with yellow post-its.

- Share what you discovered at your table.
    - Do you find consistencies?
    - Do you agree with one another?

- Be prepared to share with the whole group.

Student Composition Notebook Sample p. 40

How People Learn

- Prior Knowledge
- Conceptual Frameworks
- Metacognition

(Bransford et al., 2000)

Essences of Student Thinking

Conceptual
Framework

- •Prior Knowledge

- •Gathering Data

- •Making Sense of Data

- •Metacognition

Essence of Sample Notebook

- Look back at the Notebook you just flagged
- Use the coding system to identify the type of student thinking:
    - Prior Knowledge: PK
    - Gathering Data: GA
    - Making Sense of Data: MS
    - Metacognition: MT

Student Composition Notebook Sample p. 40

Essence Sample Notebooks: Cell Example

- Use post-it notes to flag and code examples of student thinking:
  - Prior Knowledge (PK)
  - Gathering Data (GA)
  - Making Sense of Data (MS)
  - Metacognition (MT)

Essence Jigsaw

- Read your assigned student sample
- Flag and code the essences
- Discuss the frequency of entries of each essence.
- Discuss how different prompts are used to guide student thinking

Notebook Entries: Magnets p, 60, Shadows p. 62

Increasing Student Thinking

What can you do in your practice with notebook/other forms of student response to increase student thinking?

Examining Your Own Notebook for Evidence

- Prior Knowledge
- Gathering Data
- Making Sense of Data
- Metacognition

Science Notebooks
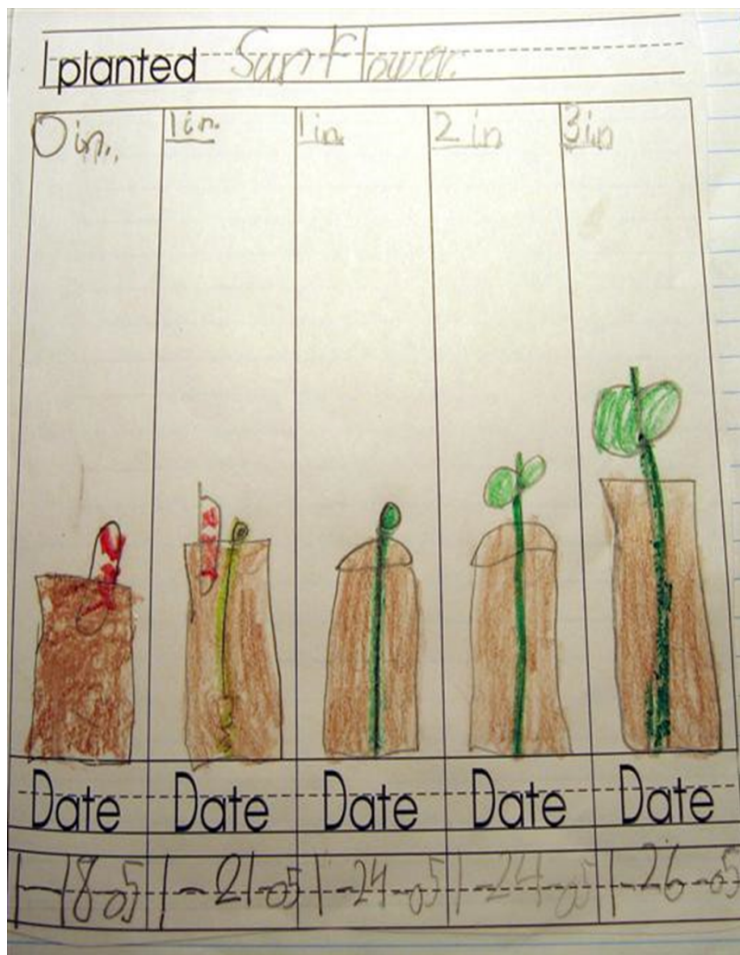
Notebook Entry Types

Considering Student Work

- Examine the samples of student work at your table.
- Think: What work do you identify with or could imagine your students doing?
- Share your thoughts with the others at your table.

Sorting Student Work

- Open Sort

- Closed Sort

- www.Sciencenotebooks.org

- What is this student work showing me?
- What essence of thinking does this entry show?
  - Gathering Data
- What type of prompt might the teacher have asked to get this entry?
  - Make observations and draw what happens to your plant over the week
- What type of prompts could be created to address the other essences?
  - **Prior Knowledge**:
    - What happens when you plant a seed?
  - **Making Sense of Data**:
    - How did the plant change during the week?
  - **Metacognition**:
    - Were you surprised about anything you observed? What else do you now wonder about plants?

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Create Prompts: How can we "pull in" additional Essences?

- What is this student work showing me?
- What essence of student thinking do I think this student product demonstrates?
- What do I think the prompt might have been?
- What are some other prompts I can create to pull in other essences?

Post Entry and Prompts for each Essence on Chart Paper.

Entry Types p.65 , Prompts p.75

Entry and Prompt Carousel

Circulate to look at the different prompts. As you go, write down prompts and any ideas gleaned from other's work you find useful for your classroom.

Prompts, Essences, and Entries

- Prompt: Directed to student to help build and assess student understanding

- Essences: The type of thinking we are explicitly asking of students in the prompt

- Entry Types: The form the student work takes.

Student Objective

How will we build and assess student understanding?

Prompts

Relate to/Determined by objective

Essences: Scaffolding Student Thinking

- Prior Knowledge
- Making Sense of Data
- Gathering Data
- Metacogntion

Entry: Form Student Work Takes

- Written Response
- Drawing
- Chart
- Investigation
- Etc

Examining PD Notebook for More Evidence

Look in your notebook for Evidence
- How have you engaged in Science and Engineering Practices?
- How have you incorporated CCSS ELA?

Planning for Implementation

- What powerful Ah-has have you had during the last three days?

- Complete the Implementation Form.

- Share your ideas with someone in your group.

Implementation Form p. 77

Standards Websites

- Next Generation Science Standards
  - www.nextgenscience.org

- Arkansas K12 Science Standards
  - http://tinyurl.com/olwrjq5

Post Survey