Teaching Science

Good Science Teaching

- Instruction is supported by research that shows what works.
- Students learn by doing! (which incorporates scientific practices).
- Students work collaboratively.
- Students should be “figuring out” and not just being passive when building science knowledge (or any discipline).
- The Learning Cycle is a solid instructional model – students explore before the explanation is completed.
- Allows time for students to reflect on what they are learning.
- Not all tasks are created equal (lower and higher-level activities are used)

You will be the best resource for your students!

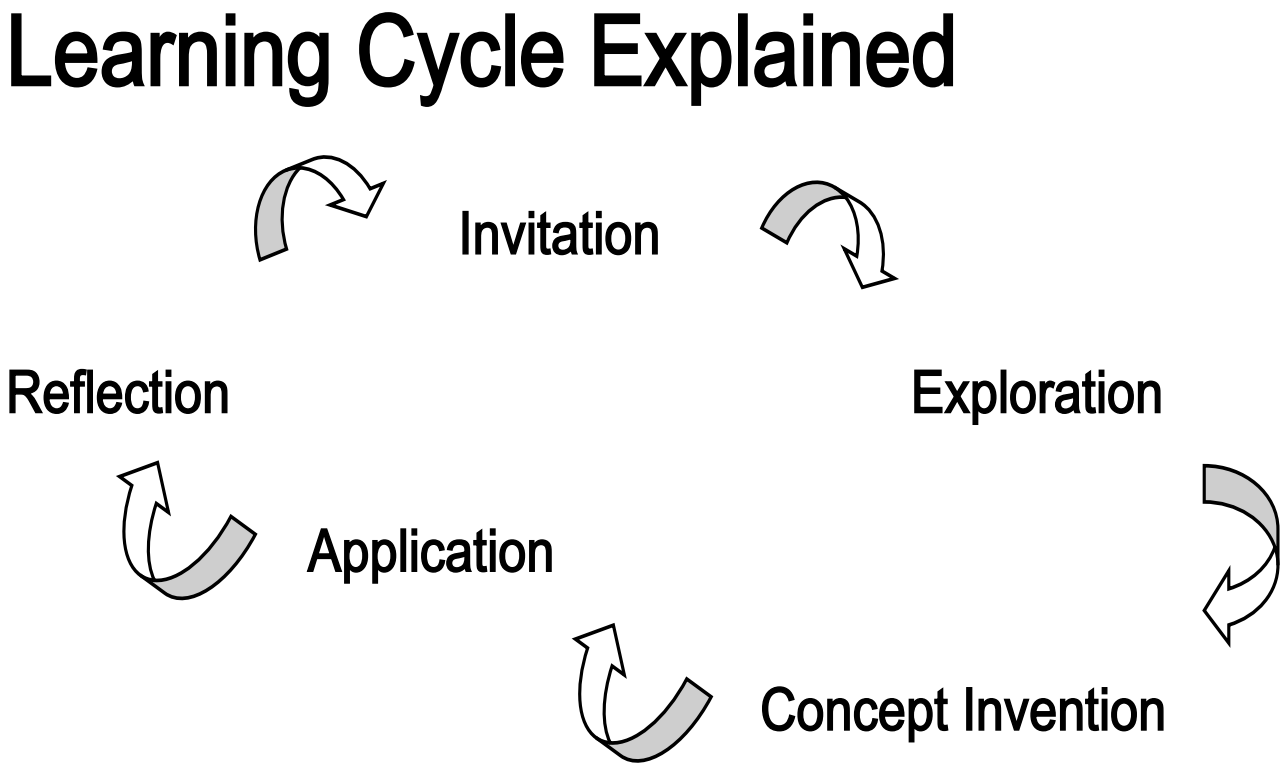
- Most of us have a comfort zone with subjects we feel we know well. Most of us have an area(s) where we are not so comfortable, thus we need good resources to help.
- Science may be that topic for you so it will be important to have a textbook (teacher edition too) that will be a good resource for you that is useable and helpful.

In the Textbooks- What you may see

- You will see the standards for Florida, but you may also see NGSS standards (not Florida specific)

- Next Generation Science Standards (national)

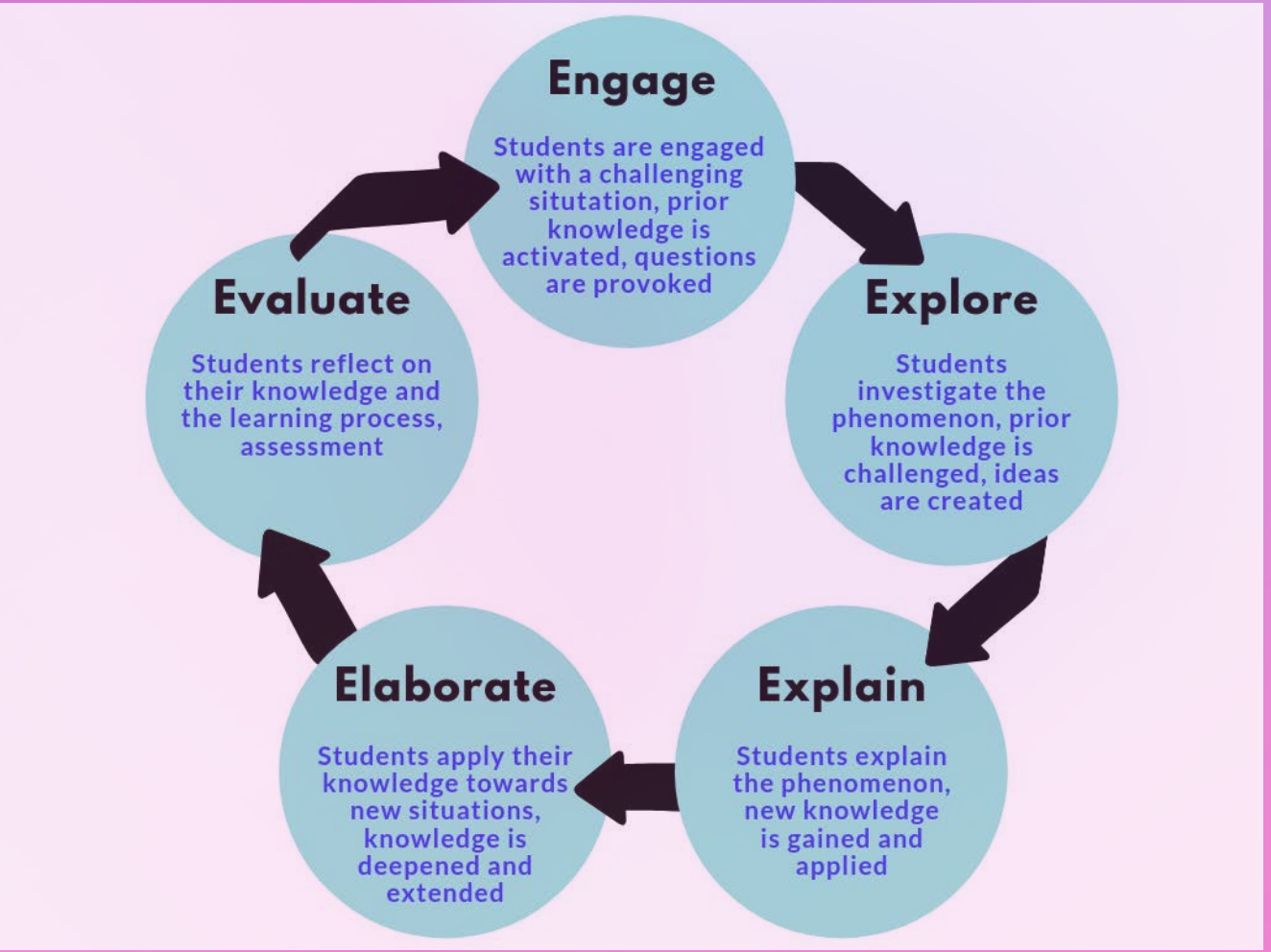
Learning cycle



Learning Cycle Explained

- **Invitation**—Initiates the learning task. Should make connections between past and present learning experiences, generate anticipation of content to be explored, and begin to focus/organize students' thinking toward the learning outcomes of the upcoming activities.
- **Exploration**—Involves open-ended exploration of real phenomena, followed by discussion about student discoveries, ideas, and questions that arise. Provides a common base of experiences for students to develop current concepts, skills and processes.
- **Concept Invention**—After interest and attention is focused, concepts and/or methods to solve problems are introduced, which enable students to construct new meanings. Students may be encouraged to develop their own conceptual statements by reflecting on what they've learned through explorations.
- **Application**—Armed with new ideas, students apply new knowledge and skills to solving a problem or meeting a challenge. They develop deeper and broader understanding of concepts, and further develop thinking skills.

5E Instructional Model



Things to Keep in Mind

The textbook and accompanying materials:

- Are good resources for the teacher (who may need help with the content)
- Are student friendly for those times they are used by students
- Contain student-centered approaches and activities
- Have a variety of task suggestions (labs that are not too scripted, activities which have students figuring out, activities with student choice and more than one solution path, activities that can be easily modified if needed)
- Scientific practices are part of the learning (integrated in activities and not taught separately)
- Questions are not just asking for rote memorization all the time but have students critically think through problems and apply when possible.