

Top 10 Gems of Science Teaching

10. Develop the skill sets that I feel are important for students to have.

To assume that students know how to organize notebooks, think critically, take class notes, be astute observers, listen to their peers, know what a testable question is, or comprehend the scientific method, is foolish. No matter if they are science process skills or other abilities, most often they will need to be developed and practiced.

9. Address multiple learning styles and academic needs; All students can learn.

Mix up different activities and assessments to address an array of learning styles and ability levels, or have options for students to do so. Never be afraid to advocate for your students' needs, socially, emotionally, or academically.

8. Design for coherency, application, and depth in the curriculum.

Integrate topics throughout the year/unit by way of essential questions and guiding themes. Content should be made relevant to students' lives or place or community. Provide real-world significance and outcomes for projects and investigations. Curriculum should focus on depth where students investigate and probe and learn, NOT on a mile wide breadth.

7. Provide specific parameters and expectations.

Use language like, "*Build a working model that uses at least 3 of these items, and weighs less than 10 pounds.....*" or "*that must be able to.....*" or "*that includes.....*" Providing parameters for lessons, projects, activities, and any self guided process will help shape and guide students' thinking.

6. Engage students in the process of discovery and learning.

Offering as much student choice as much as possible, even on little things, helps to boost investment and a sense of shared responsibility. School could easily be a fun, student-centered place. Why not make it one?!?

5. Create opportunities for as many thinkers as possible.

If I find myself lecturing and holding the information, I need to ask myself, *"Is there another way I can design this?"* *"How can students be doing more of the thinking?"*

4. Keep the subject between the students and myself.

More action. Less bla-bla-bla. Students should never be lectured to on a regular basis, rather they should be busy investigating and manipulating materials in scientific investigations. *"Show me what you're talking about"* and shared experiences should be the norm in all classes.

3. Challenge students to think critically and to become lifelong learners.

By asking questions that are just out of students' comfort range or having them take a stand on a continuum. Creating algor-heuristic labs in which students need to develop procedures to test questions. Challenging them to identify what is the mis-information or a discrepant event. Not always telling students what to do and having them figure it out. Realizing that knowledge is power and the great reward that comes with self-discovery.

2. Focus on the big picture but in a bite-sized, "slow food" style.

Many classes revolve around such things as vocabulary and other forgettable minutia. We should be asking questions such as, *"What does this mean?"* *"What of the implications, trends, the interrelatedness?"* and working toward holistic education.

A good teaching pace could be likened to preparing and cooking a stew on a winter's night, "slow-food" or a walk through the woods or the telling of a story. Get yourself out of the drive-through mentality in education; slow down and just make dinner at home tonight.

1. Smile and have fun!

If you're not enjoying what you do, don't expect that anyone else will be.