Introduction
The Art and Science of Teaching

Major principles

- Effective research about learning results from researchers and teachers working in a dynamic partnership.
- Researchers provide insight into learning.
- Effective learning is supported by teachers who are reflective about the relationship between their teaching and the students' learning.
- Teachers use research to discover answers to their own questions about how to foster meaningful learning. What teachers think is easy for learners may not be.
- Teachers must be wary of brain-based panaceas.

Assignment 1: Take some time to think or write about three roles of a teacher:

- Designer who creates the context for learning (environment, lessons) and who is able to take the perspective of learners.
- Researcher who treats student responses as data that reveal the effectiveness of lessons and that provide information for the next step in the learning process.
- Member of a professional community who interacts with researchers.

Discuss these roles by sharing illustrations of them from your own experiences or from ideas you have about how to put these roles into practice. For example, when and how have you, or might you, take on the perspective of learners in your classroom? Can you illustrate the benefits? How might you become a researcher in your classroom? What might you learn from viewing student responses as data (evidence of how students are approaching a problem or of the strategies they are using to solve it, as opposed to simple right or wrong answers)? How might you become more active in a community of educators?

Assignment 2: Write about and discuss the extent to which your school and your teaching are built on "knowing answers."

One important part of this course is the emphasis on moving away from a concept of learning that is limited to knowing the answers. In the introduction (Section 3), Jason redesigned his class so that his students would think of themselves as problem-designers (asking good questions) instead of problem-solvers (focusing on getting

answers). And Sam (Introduction, Section 7), the young theater teacher, discovered that creating his own answers to teaching problems made him a better teacher than when he simply used answers that other teachers provided.

Identify in your writing very specific evidence that illustrates your claims. What new insights are you discovering about this approach to learning?

Assignment 3: Write about and discuss the school-related topics that either reflect or conflict with the fundamental beliefs you have about learning.

Look at the final list of school-related topics at the end of the Introduction:

- Motivation, attention, engagement, and memory.
- How different students perceive and solve problems.
- Learning differences and disabilities.
- Policy and practice issues involving all aspects of school (such as homework, grading, course loads, graduation requirements, etc.).

Take some time to write about and discuss the ones that jump out at you, because the way they are manifested in your school seems either to reflect or to conflict with fundamental beliefs you have about learning. Be specific about both your beliefs and the reflection or conflict you see.

Suggested readings between the Introduction and Unit 1:

Possible review:

Ablin, J. “Learning as Problem Design Versus Problem Solving: Making the Connection Between Cognitive Neuroscience Research and Educational Practice.” *Mind, Brain, and Education* Vol. 2, Issue 2 (May, 2008): 52–54.

McDevitt, T.M. and J.E. Ormrod. “Fostering Conceptual Change About Child Development in Prospective Teachers and Other College Students,” *Child Development Perspectives*, Vol. 2, Issue 2 (August, 2008): 85–91.

Possible preview:

Immordino-Yang, M.H. “A Tale of Two Cases: Lessons for Education from the Study of Two Boys Living with Half Their Brains.” *Mind, Brain, and Education* Vol. 1, Issue 2 (June, 2007): 66–83.