Using Theory to Inform Practice

Several of the materials we have used in this course have stressed the relationship between theory and practice and between practice and research. The readings in this module and the previous one both stressed the need to use appropriate theories to inform practice and the need, when dealing with complex phenomena, to use multiple theories to enhance explanatory power – to get the "full" picture. This applies to practice, too. I use four major bodies of theory in course design and delivery. Put simply, you are experiencing research and theory-based practice. This is a very brief overview of the theories I use.

Angelos and Cross' Six Teaching Goal Areas

Learning involves much more than acquiring subject matter expertise. In fact, to acquire and be able to use subject matter expertise, a learner must develop other knowledge, skills and attributes. For example, a student must have the basic skills needed for academic success to be able to learn subject matter effectively. Angelo & Cross, in a study of teaching practice and outcomes that continued for nearly a decade, found that we faculty members should address six goal areas when we develop learning experiences for students. I try to include activities in this class each week that will address each of these six learning goal areas. They are:

1. Higher order thinking skills (tied to Bloom's taxonomy)
2. Academic success skills (organization, listening, writing)
3. Discipline-specific knowledge and skills
4. Appreciation of knowledge, ethics, & responsibilities (e.g., value diverse forms of knowledge, be open to new ideas, be informed about contemporary social issues)
5. Work and career preparation (e.g., teamwork, leadership, using time effectively, working productively with others)
6. Personal development (e.g., responsibility to others, develop self-confidence, learn to respect others, think for yourself)

Can you give an example of incorporation of each of these goal areas that you have experienced in this course up until now?

Revised Bloom's Taxonomy

Bloom's taxonomy defines six cognitive levels that human beings can reach. Lower level courses typically focus on lower level cognitive skills while graduate courses focus on higher level skills. Scaffolding is an important part of reaching higher cognitive levels. For example, you have to be able to remember and understand key concepts before you can apply them to solve a problem or use them in your work. This course aims to reach the highest cognitive level, but the course uses scaffolding in two ways. First, we start with basic concepts. Then we apply them to understand more complex ideas about sampling and data analysis. Finally, we take all of this knowledge and use it to create research designs. Second, we move within each module from lower level cognitive levels to higher levels. Can you give an example of activities aimed at remembering, understanding, applying, and analyzing in the activities you have completed so far in this module?

| Cognitive Level	Nature of Learning
Remembering	Rote memorization
	Recall relevant information or facts
Understanding	Recognize principles
	Be able to interpret or extrapolate meaning
Applying	Use knowledge to produce a result or solve a problem
	Apply something learned to a new or different setting or situation
Analyzing	See patterns
	Identify components or elements of complex systems – break the complex into simpler parts
	See how components or elements are related to each other
Evaluating	Assess the value of theories, facts, data, etc.
	Discriminate between alternatives
	Develop and use standards and criteria to make decisions
Creating	Reorganizing elements or components to create new knowledge or information

Kolb's Learning Cycle

The model below describes the four phases of the learning cycle. There are two ways you can take in experience – by Concrete Experience and Abstract Conceptualization. There are also two ways you deal with experience – by Reflective Observation and Active Experimentation. When you use both the concrete and abstract modes to take in your experience and when you both reflect and act on what you experience, you expand your potential to completely engage in a learning process. A very large body of research, generated over the past 40 years, shows that completing all of these aspects of the learning process is very important if we want learning to go beyond the lower cognitive levels, and especially if we want to be able to use what we learn. Can you identify activities that we have conducted during this module that contribute to each of these four aspects of learning?

Concrete Experience: Learning by experiencing, such as learning from guided activities and examples, learning through interaction with other people, thinking about new ideas or finding new information

Reflective Observation: Learning by reflecting, such as carefully observing before making judgments, viewing issues from different perspectives, looking for the meaning of things

Abstract Conceptualization: Learning by thinking, such as logically analyzing ideas, planning systematically, acting on an intellectual understanding, identifying the assumptions underlying your own ideas

Active Experimentation: Learning by trying to solve problems, such as separating a complex task into parts, applying concepts or ideas to concrete situations, questioning your own conclusions
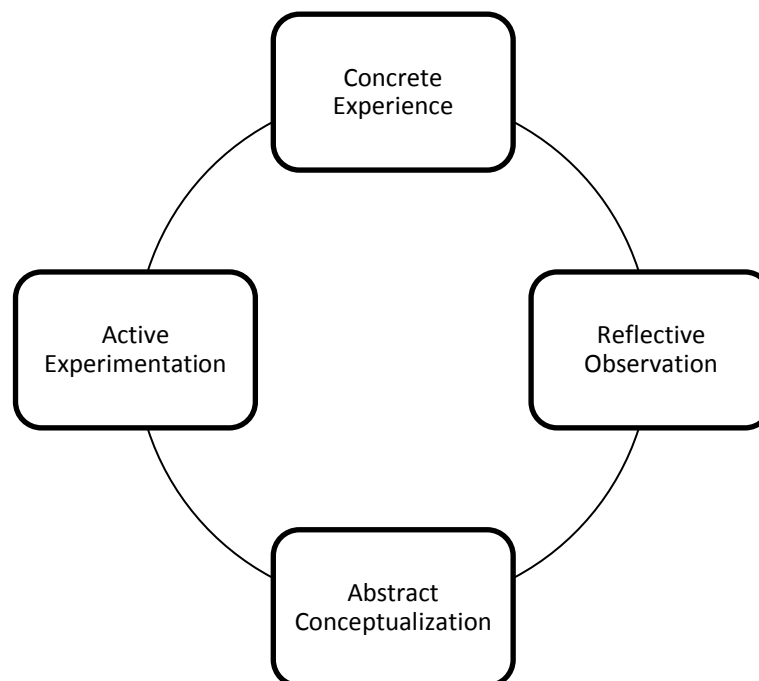
Last But Not Least – Brain Based Learning

There is much more to this. I just wanted to give you a hint of how this plays into what we do in this course. So here's one of the recommendations for "teaching to the whole brain."

Learning is biological. The brain remodels itself based on experience (neuroplasticity). We learn through repetition. Incorrect or flawed ideas or skills can become embedded in the brain just as easily as correct or flawed ones. Learning requires correcting fundamentals. Learning in authentic environments – really trying to use what you are learning, even when it is hard – is critical to enhancing skill and expertise beyond basics. Think about the lecture by Fiala and the pages in the Fawcett article, the study guide for this module, and the activities you have completed so far in this module. Can you identify ways that we have used neuroplasticity, and specifically learning through repetition, so far in this module?