Learning about Learning
Instructional Resources & the Adult Learner

Instructors are encouraged to refer to these resources prior to attempting to teach this course. As an instructor you will be challenged in three ways:

- Each student in your class learns differently
- The average student has a 15 minute attention span
- The long-term retention of material transmitted via lecture is 10%

This course has been designed to maximize student engagement and material retention via a more balanced course offering. The resources below will prepare you for teaching in this environment. Click on the Read More link for each lesson.

Learning Styles

Every student in your class learns differently. This can be a shocking realization for two reasons: (1) we tend to be familiar with our own way of learning only, and (2) most classes, particularly at the university-level, are taught in a similar way (lectures). Lectures are, for most learners, very mismatched with their preferred ways to learn. This doesn't mean that people can't learn via lecture, simply that it is not as easy nor effective for long-term retention.

Before you can understand the module structure for the Regional Course in Air Quality, it is important that you begin to understand the range of learning styles. There are many ways to classify learning preferences; we will examine a method called the Index of Learning Styles. It resolves learning preferences along a spectrum of four pairings: (1) Active/Reflective, (2) Sensing/Intuitive, (3) Visual/Verbal, and (4) Global/Sequential. While each of us has some ability to operate in each of these eight ways, we have a unique combination of preferences for these eight learning methods.

Do the following:

1. Read this article for one learning style classification system, and strategies to work with such learners: Learning Styles and Strategies by R.M. Felder and B.A. Solomon [time required: 15 minutes]
2. Assess your own learning style preference with this online survey: Index of Learning Styles Questionnaire [time required: 15 minutes]

Attention Level

There are two challenges to confront regarding student attention level. The first one is at the beginning of every class; research suggests that the first 10 minutes of any class are a mental ramping period. It simply takes a while for the brain to engage. The second challenge is that the average adult attention span is around 15 minutes (at best); everybody has competing mental demands.

How can we overcome these issues? We can't completely, but we can certainly make improvements. The easiest way is to share the learning experience. This will probably deviate

from most of your past classroom experiences, particularly at the university level, but it is critical for learning success. It is not easy, at first. While some people have the skills to create a multi-directional learning experience between students and educator on the fly, a structured approach serves most educators better. Such an approach will serve as a (flexible) road-map. Don't be afraid to use the map, but don't be afraid to take a detour either. With practice this new form of teaching will become second-nature, and actually make much more sense.

The structured approach we will use is based on a Learning Cycle, a repeating framework that engages the students singly and in groups. The cycle is one that balances information from the teacher with that from the students. It's discrete steps provide mental gear-shifting that helps overcome the 15 minute attention barrier, as they will never be in one speed longer than that. Additionally, we will use early stimulation to speed through the class ramp-up. For example, note how each set of the instructor's slides opens with a photograph connected to the topic. It helps set the stage as the student's are entering the classroom; most people will find it difficult to not begin to ponder the topic prior to the class even officially beginning.

Do the following:

1. Read at least one of these articles about learning cycles:
   o [Experiential Learning Cycles](#) -- an introduction to several learning theories used over the past two decades [time required: 15 minutes]
   o [Kolb's Learning Styles](#) -- in-depth academic coverage of Kolb's Learning Cycle, the most commonly cited learning cycle [time required: 20 minutes]
   o [The Experiential Learning Cycle](#) -- an easy-to-read coverage of Kolb's Learning Cycle [time required: 20 minutes]
   o [The Learning Cycle](#) -- a brief, easy-to-understand, overview of Kolb's Learning Cycle [time required: 3 minutes]

2. Think about the following questions:
   o Which type of learner are you, based on Kolb's description of learning styles?
   o What type of knowledge would you best be able to teach?

Retention

Retention of material learned via lectures approaches 25% within three months after the course. Longer-term, the retention rate of lecture-acquired knowledge drops even lower, approaching 10% within a year. A waste of effort, energy, and time. Lecture is a minimally effective teaching method, at best, yet this is exactly the typical learning experience. How do we change this? First, we will build on the Learning Cycle concept, integrating research that shows dramatic gains in retention when we go beyond passive, verbal teaching methods (lecture).

As an educator, it's your task to lead students higher up the path. We can do this by building different learning opportunities throughout the session. Sometimes a (short) lecture is important to get critical material across, but we need to have more than that.

So, if we fuse together the Learning Cycle framework with some of the learning methods depicted above, we might have a reasonable model to use. We will keep it flexible enough to modify. If some part of the session is producing great insight, run with it. If another part does not seem to merit inclusion, cut it. Remember, it is not how much material you get through, rather

how well the material is covered. Effective learning is quality, not quantity driven. In general though, as a guide, each module is designed along the following path:

Share -- > Hear --> Connect --> Reflect --> Respond --> Grow

Occasionally, there are partial sub-loops within the overall module pathway.

Let's briefly cover each:

Share: For the reasons mentioned, it is important to get the students engaged quickly. Most modules will start with an immediate sharing activity to accomplish this. Additional benefits are that it allows you to gage the knowledge level of your audience, and the personality of your class. In the modules this is done with the Did You Know? and Activity sections.

Hear: Lecture is a great way to transmit the basics. In the modules, this is the material in the Theory sections. During this phase, students are primarily listening. This is also a good opportunity to embellish the Theory with experiences and opinions of your own, else the students could simply read the slides (or other references). Always think of what value-added benefit your presence adds to the classroom. The Student Handouts file for each module focuses on this Theory material as it is most dense; intense note-taking is a sure way to lose the audience, hence the handout material.

Connect: While general theory is important, many students will not internalize it unless there is some concrete example to connect it to. In the modules, this is the Application sections.

Reflect: Now we build on the emerging awareness. This phase is where the students are posed a more open-ended question in order to extrapolate from the example. A good question would also help the student connect this new knowledge to past knowledge. This is experienced in the Analysis phase of the modules.

Respond: A second form of sharing, the prior reflection should provoke a response. Giving reflection voice, via explaining your thoughts or teaching others, is one way to drive learning even deeper. This is done at the end of the Analysis phase in the modules.

Grow: Partly through this sharing of responses, partly through module concluding self-assessment, the goal here is to have the students take their thoughts to some new level.

Do the following:

1. Think of a small topic you would like to learn (or teach somebody). Draft a possible "class" for this topic, based on the above structure. [time required: up to 30 minutes]
2. Think of some time in life when you learned a lesson that you can still recall today. Can you identify any of the above elements in that learning experience? What made it such a memorable experience? [time required: 10 minutes]