Teaching at Albany February 2011

Upcoming ITLAL Events

Preventing and Handling Plagiarism
March 2, 2011 • 3:00pm – 4:30pm
ITLAL Underground (LJ-B69)

In this workshop we will take a closer look at why students plagiarize and offer strategies for preventing it with effective assignment design. We will also discuss how to handle plagiarism when it does happen.

Faculty Spotlight: Engaging Students in Large Classes
March 16, 2011 • 3:00pm – 4:30pm
ITLAL Underground (LJ-B69)

In this workshop, a panel of instructors will share the strategies they have used to improve student learning and their own teaching experiences, including strategies to enhance student motivation and involvement, hold students accountable, and make better use of class time.

ITLAL Services
Midterm Survey Service

This service allows your students to comment anonymously on their experiences in your current courses. The information collected, which is strictly confidential, can confirm the effectiveness of your course and method or provide you with insights on how you might make midcourse adjustments, if needed.

If you want to use this service, please make your request to us using the very simple online form available at our website from now through March 8. All surveys need to be administered by March 11.

To register or apply for these events, please visit:
http://albany.edu/teachingandlearning
or
Telephone: 442-5521
or
E-mail: teachingandlearning@albany.edu

Teaching for (not against) the Brain

Have you witnessed any of the following behaviors in your students?

- When you give them a writing assignment, they turn in what is clearly a first draft—with no evidence of revision or reflection on what they have written.
- When you ask them to solve a problem, they simply plug elements into a formula and may even arrive at the correct answer but don’t understand why.
- When you ask them to analyze a text or artifact, their evaluation simply regurgitates the language of their textbook or merely addresses surface issues without any demonstration of thought.

Why do students who have already completed over a decade of formal education before they arrive in your classroom continue to engage in these frustrating—and clearly uninformed—behaviors? Actually, their educational experience is likely the source of their misconceptions about how academic work is accomplished. The prevailing belief that students must master large amounts of knowledge before they can begin trying to apply any of it often means that courses become “information dumps” where covering the basic content—rather than fostering deep understanding through application of knowledge—becomes the focus. In a typical course, the process may appear to be linear: teacher lectures on concept A, students are tested on concept A, teacher lectures on concept B, students are tested on concept B, etc. This process happens several times throughout a course, and students experience education as a linear process whereby they “learn” one concept and move on, rarely if ever taking the time to reflect on what they have learned or to make connections between key ideas in a course. As a result, students often leave courses—and the University—having succeeded in their coursework but without having mastered the information and the skills that we would expect.

Our own experience as students and scholars tells us that this process doesn’t produce deep learning. Current research on the brain and the learning cycle also demonstrates that learning isn’t linear at all but is instead cyclical and recursive. More importantly, this research shows that the linear conceptualization and organization of many university courses run counter to the way the brain works: by frontloading information and deferring experience, we not only kill student curiosity, we actually suffocate or short-circuit their learning.

What we know about learning

In his book Experiential Learning (Englewood Cliffs, NJ: Prentice Hall, 1984), David Kolb builds on the ideas of John Dewey, Jean Piaget, and Kurt Lewin to theorize about the sequence of experiences that produces deep learning; if any part of this cycle isn’t completed, he argues, then learning will be shallow. Below is a graphic depiction of Kolb’s cycle.

Kolb asserts that authentic learning includes experience and reflection on that experience. Only after going through these parts of the process are we ready to abstract from what we have learned and draw broader lessons that allow us to test our new ideas. This is how deep, lasting learning happens. The traditional approach of heavy doses of frontloaded information doesn’t give students the opportunity to start with concrete experience. For example, in a typical math class a professor might give students the information—an equation, perhaps—that they need to solve a problem (abstract conceptualization) and then ask students to solve problems using those concepts (active testing). In this structure, students don’t have the opportunity to encounter the content directly and then reflect on it, which will help them to develop a context for the concepts the professor is going to ask them to use.

What we know about the brain

The experiential learning cycle described by Kolb actually corresponds with the physiology of how the brain works. In The Art of Changing the Brain (Sterling, VA: Stylus, 2002), James E. Zull demonstrates how the experiential learning cycle is a biologically natural process. Different parts of the brain fulfill different functions in this process:

- Sensory cortex: experiential; receives sensory input (vision, hearing, touch, position, smells, taste)

continued on the back
Here is a “simple plan” for taking students through a natural learning cycle:

Creating an experiential, brain-based learning sequence does not require an instruction-driven learning process for our students in order to promote deep learning. We want them to take with them when they leave the University. The good news is that we can design courses that reproduce the more dynamic and biologically accurate memory formation process. Of course, a few students will be content to pass (or even score very well on) a test of memory, it is not likely to produce the kind of deep, lasting learning that we ultimately want them to take with them when they leave the University. The good news is that we can design courses that reproduce the more dynamic and biologically driven learning process for our students in order to promote deep learning.

Implications for teaching and learning

If you think back to the traditional method of teaching (professor lectures and students receive information), you’ll realize not only that we tend to short circuit the learning cycle, but also that we rely very heavily on one part of the brain: the back integrative cortex, where memories are formed. Much of students’ time in school is spent remembering information, but comparatively little is spent in using that information for planning and making decisions. And because they’ve often skipped the concrete experience and reflection stage, when they are asked to recall information and use it to solve problems, it becomes a “plug and chug” exercise rather than a true thinking experience. Of course, a few students will be very successful in this model. But while it might suffice for them to pass (or even score very well on) a test of memory, it is not likely to produce the kind of deep, lasting learning that we ultimately want.

Creating an experiential, brain-based learning sequence does not require an instructor to overhaul a course entirely, but instead to re-organize the delivery. Here is a “simple plan” for taking students through a natural learning cycle:

1. Ask students to complete a task that requires use of targeted concepts (that have not yet been presented). (Concrete experience)

   Putting this step first is the most radical shift in the typical academic sequence, and while it can be the hardest for us to envision, it is the most crucial. The key is to begin by asking students to solve a problem or make a decision without enough information; they have to make a “best guess.” These activities tend to work particularly well with students in small groups as it takes some of the anxiety out of the process. Some examples:
   - Give students the parameters of a study and have them predict the results. (Social science)
   - Show students a physical situation (two cars about to crash, a karate expert breaking blocks) and ask them to describe specifically what will happen. (Physics)
   - Give students an unlabeled graph to read and have them hypothesize what the graph represents. (Social or natural science)
   - Give students a short excerpt from a text they haven’t read and ask them to speculate about its context or make predictions. (Humanities)

2. Create connections to prior knowledge. (Reflective observation)

   As students attempt to work out a solution to the initial problem, they will be drawing on things they already know to formulate their answers. Spend a few minutes asking students to justify their answers and to process the experience they just went through, explaining why they made the choices they did.

3. Clarify understanding. (Abstract conceptualization)

   Once students can explain how and why they responded the way they did, it’s important to get them to articulate the concept, theory or other abstract notion that drove their thinking. This is the move that truly initiates the critical thinking process, because this is the moment at which students make their understanding portable to another situation. It is at this moment that you might also ask students what would have helped them to solve the problem. At this point they are ready for more (and more formal) information. In fact, they want to hear what the experts have to say because it means something—now that they have a context for the information. This is where a short lecture or demonstration belongs, not at the beginning as in the traditional model. Ask students to compare what they already knew to the new information: where was their thinking in line with the information, and where were they off-track?

4. Ask students to complete another task. (Active testing)

   Now that students have more information, ask them to complete a different, possibly more complex task that will draw on what they’ve learned from their first attempt and from the conceptual knowledge you’ve given them. You may even be ready at this stage to give students a graded assignment to assess their understanding of the key concepts and processes involved in solving the problem.

A final word on covering content

The most common worry instructors have about engaging this sequence is surrendering content to the process. And the truth is, you will find yourself “covering” less content—you will lecture less, and initially you may feel like you’re getting through less of the course material. However, after you become more comfortable and more practiced with this process, you’ll get a remarkable payoff: your students will actually learn more, and they’ll be learning better because they are more likely to retain what they have learned after your class is over.