

Essays on Teaching Excellence

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Teaching for Cognitive Growth

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As a throng of students streamed past us in their eagerness to abandon classrooms for spring sunshine, we overheard some conversations typical of the end of the semester.

"What a total waste of time! Boy, was she ever off on tangents today." "I thought it was great. The discussion really made me think." "But it's not important! She told us not to take notes, so it can't be on the final."

Another pair were discussing the grades they had received on their term papers.

"I will not accept a grade of C just because I don't agree with the professor's philosophy. It isn't fair." "Then you should go talk to the guy. He'll listen if you can make a good case." "What did he give you?" "I got an A." "Man, (expletive deleted), it's all B.S.!"

These casual remarks are more than illustration of the eccentricities of late adolescence. As William Perry (1968) informs us, they are windows into the students' worlds, clues that they view teaching and learning differently than their teachers. The Perry model arms us to make sense of the ways we are regularly misperceived and misunderstood by our students.

The Perry Model The theme of Perry's work is that no matter how unclouded our message or lucid our meaning, students make their own meanings from their own cognitive structures. Our students

come to us naive epistemologists, replete with mistaken views of the nature of knowledge and its acquisition. Perry charts their odyssey from naiveté to maturity through stages where these restrictive cognitive chrysalises are outgrown for increasingly more subtle structures. Briefly, the journey involves the following.

Most students begin college as *dualists* who view knowledge as objective and absolute, possessed by the authorities. In an intellectual world of black and white, they are zebra thinkers irked by uncertainty and anxious at ambiguity. Of their teachers they demand "just the facts, ma'am." To them, acquiring facts is learning. Dualists subscribe to a "baby bird philosophy of education" with its own three R's --- receive, remember, and regurgitate. The student above who dismissed discussions as irrelevant to the test was undoubtedly a dualist.

Because we force them to fulfill "breadth" requirements, the dualist's world is soon dimmed by the fogs emanating from doubt-ridden disciplines in the humanities and social sciences. As the students perceive it, certainty retreats to the "hard" sciences, while elsewhere truth yields to disagreement and dispute. Authorities sometimes confess, "I don't know," and textbooks are rife with controversy. These factors initiate the stage of *multiplicity*. Aware that the rules have changed but unclear as yet what new rules are at work, the student adopts the view, as Perry puts it, that "if nobody knows, anything goes." Knowledge is seen as coming in Heinz 57 Varieties. Which flavor one prefers is a matter of opinion, and one opinion is as good as another. Students believe that because there is no objective and absolute truth to guide them, professors must be grading them on something else --- quality of expression or agreement with their own subjective views. The disgruntled student with the C paper, above, is a classic case, for he chants its refrain, "It's all B.S."

In multiplicity, students develop a sense of gamesmanship, of "giving them what they want." Ironically, it is this that pulls them out of multiplicity into the stage Perry terms *relativism*. In essay exams and term papers, we press them to produce more than the dualist's assortment of facts or the multiplist's unsupported opinions. We demand instead that fact and opinion be related in the form of

arguments that conform to our disciplines' rules of evidence and inference. Eventually, while playing the game, the student comes to see that facts and opinions do relate; that beliefs justified by argument constitute most knowledge. With this understanding, the student has entered the world of contextualism and interpretation that characterizes most of academia⁽¹⁾. The students we met above who saw the value of discussion for getting one to think and who trusted in the reasonableness of the professor had accepted relativism.

How can we help them grow Think of typical introductory level courses at your institution. Are they designed to facilitate our undergraduates' cognitive growth, or do they instead put further barriers in their path?

Many large undergraduate classes consist of 50 minute lectures, multiple choice tests, passive roles for students, and little personal interaction between faculty and students. These four characteristics have the unfortunate effect of encouraging rote learning, obscuring the differences between high school and college, and riveting dualists to where they are. Given that large classes are here to stay, how can we surmount these barriers to facilitate cognitive growth?

Experiential Learning

Experiential learning is a key factor in the intellectual growth of learners (Kolb, 1984). Teachers can help by providing students with a variety of hands-on learning opportunities (for example, open-ended questions, case studies, and projects) that help them to connect new information to the knowledge they bring with them. Group work is especially effective in allowing students to profit from the various levels of cognitive growth represented by their peers.

Even in large sections, students can become actively engaged in solving problems or discussing issues. Carol Weiss of the Philadelphia College of Pharmacy and Science suggests posing a question at the beginning of class that your lecture provides clues to answering. The last portion of class time can then be used for students to write and report their answers individually. Even quiet students can be enlisted to read what they have written and you can collect these answers to gauge how well your message was received.

Testing

Often in large classes, multiple choice, machine-graded tests seem like the only viable testing option. Unfortunately, this format reinforces the dualist's belief in "the one right answer." You can shift the focus towards arguments and evidence by adding short answer questions or by having students offer reasons for some of their answers. True/false tests can ask students to write correct answers to the questions they marked false or include choices like "true with the exception of..." Interesting results occur if you ask students not for the answer but rather an explanation of how they would arrive at one.

If most of your students are in early Perry stages, start with mostly objective testing, then move to more challenging, open-ended questions. Give students the opportunity to practice developing logical arguments initially in non-threatening situations (gradewise) before they are tested --- for example, with extra-credit problems or in-class group projects. As students build confidence in these tasks, you can start to include them in your tests.

Habits of Mind

Cultivating in our classrooms the intellectual habits of scholarly discourse articulates the direction of student growth for all levels of cognitive development. One way to achieve this climate is to model the process of our disciplines, to serve as exemplars of what it means to know and inquire in our fields by particular emphasis on how the claims of our disciplines are validated. This entails that we unpack our expertise to make our knowledge explicit, to invite students into the quest for knowledge by showing them not only the fruits of our inquiries, but the way that we pursue them. By doing so, we portray what it is that we expect the student to strive for.

It is helpful if the rules of classroom discussion are established early to make our conversations with students, as Maggie Lampert (1990) states, "functional not only for communication but for reasoning."⁽²⁾ When students learn, for example, to preface their remarks with "I think (don't think)," "I agree (disagree)," disputes are marked as issues of ideas, not persons. When we ask for evidence for their assertions (e.g., "Why do you think that?" "How would you support

your view?"), we signal that successful refutation depends on the strengths of the case, not on appeals to authority. Dualists can be urged to develop flexibility by being asked "What is another way of looking at this issue?" or "How might an opponent challenge that view?" or "Can you think of an exception to that statement?". When multiplistic students are asked to evaluate the strengths of alternative arguments objectively, they learn the standards that mark the next stage in development.

In the End Gilbert Highet (1950) wrote that the young "have no faults, except the very ones they are asking you to eradicate: ignorance, shallowness, and inexperience." Perry's insights support this view. Armed with a few strategies to overcome the constraints of large classes and hectic schedules, we can help students to accomplish the growth they seek us to aid.

Notes

1. The final stage in the Perry model (commitment is an ethical, not an epistemological one, that lies outside the purpose of this paper. The reader is referred to Perry's book (1968) for fuller treatment of this and the other stages.
2. We are indebted to Lampert's work for many of the ideas in this section.

References

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