

January 1997
ACADEMIC PROGRAMS
Teaching Them to Think

Adapted from an essay by David C. Finster, Wittenberg University

Not long after I embarked on my teaching career, I realized that to be an effective teacher one must first know something about learning. To try to convey knowledge with no understanding of the process of receiving it is to forget the principles of communication, and important aspect of student-centered learning.

My questions about learning led me to the work of the educational psychologist Jean Piaget on cognition in children. His insights, which beautifully explain how children learn to think about problems and to make sense of the world around them, were critical for me. Indeed, understanding how to foster a child's natural growth from simplistic to more complex and abstract thinking processes seems to me vital for any teacher.

But what about teaching college freshmen? Are they just "big children"? In the sense that they are still wrestling with the turmoils of adolescence, now compounded by the independence and responsibility of college life, perhaps so. But in the sense that they are making the transition to what Piaget calls formal operational thought, they are not.

A clearer view of cognition in college students came to me from the work of William Perry. He studied the college experience thorough lengthy interviews with students over several years, an then formulated a "developmental scheme" based on his findings. His charting of the intellectual and ethical growth of college students reveals much about the processes of learning and teaching.

Perry's scheme describes progressive stages in the development of the ability to comprehend the difference between information and knowledge, to understand the roles of teacher and student, and to make considered decisions in resolving life's simple and complex dilemmas.

At the first stage, students are "dualists," with a right-or-wrong view of the world. They see knowledge as a collection of facts to be memorized, and authority figures as having all the answers. At the middle stage, they develop a more complex world view, recognizing that there can be a variety of opinions and viewpoints on an issue. Later they become capable of evaluating those different perspectives through reasoning and judgment, and, finally, they are able to make decisions and commitments based on their own value systems. This latter stage is crucial in the formation of individual identity.

Perry notes nine distinct development "positions" along the way to maturity, which

must be gone through sequentially - that is, one cannot advance from the second to the fifth position without going through the third and fourth.

Most students come to college in "late dualism," or at the third position, believing that the purpose of education is to accumulate information and that people in authority have the right answers. Their ability at that stage to see multiple perspectives on an issue is very limited. The way to promote their progress along Perry's scheme is to challenge them to think at the stage just beyond their current level while providing the necessary support to help them do so.

A good teacher seeks not only to build students' knowledge of the content of a discipline but also to teach them to think critically as they learn. The second aim may explain the difficulty some students have in learning at the college level. Critical thinking - that is, the ability to evaluate different perspectives and challenge assumptions - comes a stage in

the Perry model that is beyond students in the "dualist" position. Teachers naturally prefer teaching their disciplines at that level, however, and many expect their students to welcome this broadening aspect of their education. Dualists, on the other hand, see education differently.

A problem arises when the gap between where students are in their intellectual development and where we teach is too large. Most teachers are aware of the gap, but find that time-honored teaching methods do not readily bridge it. Some choose to ignore it, because they are loath to "water down" their courses. Others eliminate it by reducing their goals to a more elementary level and teaching information rather than thinking skills.

The latter tactic, teaching information, is encouraged in our educational system, because content is readily measured by testing, and so "mastery" of a subject can be easily demonstrated. Unfortunately, teachers who resort to it entrench their students in the early stages of development by reinforcing a simplistic view of education.

An alternative solution to the problem would be to adopt a developmental instructional method. Using that approach, a teacher begins by recognizing where students are in their ability to understand the purpose of education, to see a difference between information and knowledge, and to think for themselves in the classroom. The aim is to foster their intellectual growth from that point on.

A favorite saying of mine is that the purpose of college is to calm the disturbed and disturb the calm. Part of good teaching is challenging the way students think, while at the same time providing them with mental and emotional tools to resolve the dilemmas they face. In this manner, we help them grow incrementally and become mature adults.

Developmental-instruction theory holds that success in fostering intellectual growth

depends in large part on the degree of personal interaction in the educational environment. Such exchanges between teacher and student play a vital part in active, participatory learning and in the development of critical-thinking skills.

Another tenet of development theory is that the first year of college is crucial in tapping students' potential to grow intellectually. While large sections of the introductory courses are efficient in terms of allocating teaching resources, the freshman year is the worst time for "mass education" because it reinforces the early-stage idea that the purpose of education is to amass information. However, large-enrollment courses can still stimulate critical thinking.

As a chemistry professor, I have adapted developmental theory to teaching science courses. I begin by challenging the notion that science is Truth - a classic dualistic belief woven into our culture from the time of Galileo and Newton. There are multiple perspectives possible in many aspects of science, and while I point out that in some cases only one answer to a scientific question is the right one, I present alternative perspectives as often as I can in class. Discussing applications of science that both create and solve societal dilemmas provides ample opportunity for examining different perspectives. In teaching my chemistry classes, I focus on process as much as on content. How one solves a problem in chemistry is as important as the solution particularly when one is learning. I avoid multiple-choice tests in favor of examinations that force students to solve the problem and to explain how they approached it. I try to lecture in an interactive way also, by engaging students in the process of thinking through an argument rather than just presenting them with the facts and theories. They begin to become educated scientists by discussing historical and current scientific issues in class, in assignments, and on tests.

Writing is a well-recognized method of exposing students' thought processes to themselves, and I assign my students term papers that require them to investigate a contemporary, controversial issue in science and the present their conclusions clearly. In fact, I "think developmentally," even when I am prescribing the format for writing up their lab reports.

The changes in the way I approach my classes that have resulted from my study of development theory may seem insignificant individually, but in combination they have added a new and exciting dimension to my teaching. As I listen to students talk about learning and life, I hear Perry's positions and stages reveal themselves. His model has given me a framework for understanding my students' assumptions about education - particularly as they conflict with mine. It helps me guide their progress with a sense of direction. Student - based teaching has worked for me, and I am convinced that the Perry model can be applied profitably in any discipline.

***** For more information on Perry's developmental theory scheme, see Perry, Jr., William Graves (1970). Forms of intellectual and ethical development in the college years. NY: Holt, Rinehart and

Winston. The text is available in the Undergraduate Library , 371.81P42f 1970. The text is almost verbatim of the original study report, Perry, Jr., William Graves (1968). Forms of intellectual and ethical development in the college years. Cambridge, MA: Harvard University Bureau of Study Counsel. The report is available in the U of IL Library, 371.81P42f.

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A teacher is a consultant and a catalyst, not just a dispenser of information.
-- Author Unknown

Thinking About Teaching

What Are Students?

Students are the most important people in our college.

Students are not an interruption of our work - they are the purpose for it.

Students are a necessary part of our business - they are not outsiders.

Students are not cold statistics - they are flesh and blood human beings with feelings and emotions like yours and mine.

Students are people who bring us their needs - it is our privilege

to fulfill those needs.

Students are deserving of our most courteous and attentive treatment.

Students are full partners in our efforts to cultivate wisdom through knowledge.

Students are the life blood of this and every college.

-Author Unknown

Good questioning leads to student involvement and student learning. Here are some thoughts on questioning techniques.

- Broad, diagnostic questions provide a springboard for opening up a discussion. "What's your interpretation of _____?" or "What's the problem that we have encountered?"

- Specific questions call for action or a decision. "What should be done in this situation?"

- Synthesis questions extend the thought processes. "How does that comment tie in with (earlier comment, another student's comment)?" or "Can you carry that idea a bit further?" or "What are the implications of what (another student) just said?"

- Priority or ranking questions help students sort out levels of importance. "What's the most important issue here?"

- Challenge or test questions help students learn to defend their answers. "Do you really believe that?" or "What evidence do you have to support your view?"

- Simple questions help clarify a response. "What do you mean by that?"

- Hypothetical questions help students move beyond the facts they have heard or read. "Suppose that doing _____ the producer had done _____." or "Suppose you had grown up on some livestock farm instead of the city, would your response be different?"

- Summary questions help bring discussion to closure. "What themes or lessons have emerged from today's discussion?"

- Factual, fill-in-the-blank questions are overused and often result in a guessing game where the student tries to guess what the instructor is thinking. "The most important reason for studying history is what?"

No one type of question is better than the others. But a variety of questioning techniques are surely more palatable for both students and the instructor. To help ensure variety, pencil the lead questions for discussion in the margins of your teaching notes. Or choose two or three types of questions to concentrate on using during a particular class session or week. Then practice asking questions so you feel more comfortable in asking and students are comfortable in expecting to be brought into the discussion by your questioning.

Enrollment Target Raised

The enrollment target for the College of ACES has f the campus administration and friends throughout Illinois, are aiding in the efforts of the college in the best and brightest for undergraduate study in AC

Meet Potential ACES Students

Undergraduate Education Policy

Committee Charts Effort

FFA DAY with the Illini

Saturday, February 15, 1997

West Great Hall of Memorial Stadium

12:30 - 2:30 p.m. Pre-Game Meal served (meal begins three hours prior to game time)

2:00 p.m. Illini Pep Band and Cheerleaders perform (tentative)

2:30 p.m. Auction (Illini Items)

3:30 p.m. Fighting Illini vs. Michigan State

RESERVATIONS DEADLINE IS JANUARY 25, 1997

NAME _____

ADDRESS _____

Daytime Phone Number _____

____ Number of Meals @ \$10.00 each.

____ Number of Meal (Pork Chop or Chicken Sandwich and Basketball Ticket packages @ \$20.00 each.

_____ Total Number of people attending the event.

Please make your check payable to: Illinois Foundation FFA
Mail this form with payment to: FFA Day with the Illini
Illinois Foundation FFA
P.O. Box 50
Roanoke, IL 61561
Any questions call (309) 923-7413.

The Undergraduate Education Policy Committee has selected several important initiatives to address during the year, in addition to the activities normally associated with the committee. Various members of the committee will be concentrating their efforts on study abroad options in the college, internships, and

special problems activities, requirements and credit statistics courses in ACES, and changes that may occur as campus moves toward responsibility-centered management. The committee will also give leadership as the college continues to address the implementation of additional portions of the Gen Ed requirements. Laurie Kramer, HCD, chairs the committee.

Office of Academic Programs
College of ACES
104 Mumford Hall, MC-710
1301 W. Gregory Drive
Urbana, IL 61801

DEAN OF STUDENTS	COUNSELING CENTER-333-3704 & MCKINLEY MENTAL HEALTH-333-2705	UNIVERSITY POLICE	STUDENT CONFLICT RESOLUTION 333-3680
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<ul style="list-style-type: none"> - Emergency Dean *general concerns *excessive absences *personal problems *academic problems - Harassment/ Discrimination Complaints - Withdrawal from the University 	<ul style="list-style-type: none"> - Suicidal students - Alcohol/drug Problems - Psychotic students *incoherent *delusional *hallucinating *catatonic - Depressed students - Eating disorders *bulimia *anorexia 	<ul style="list-style-type: none"> - Violent students/ others posing immediate danger * CALL 911 - Violations of law (Non-emergency) *Call 333-8911 - Consultation with on-duty shift supervisor *Call 333-1216 	<ul style="list-style-type: none"> - Student behavior code violations - Academic integrity questions - Mediation services - Unwanted attention - Disruptive student in class
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Undergraduate Education Policy Committee Charts Efforts

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ACADEMY OF TEACHING EXCELLENCE

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Department of Human and Community Development

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