# Teaching at the Ohio State University: A Handbook

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Office of Faculty and Teaching Assistants Development

The Ohio State University

# Teaching at the Ohio State University

# 1: Profile of Ohio State

One of the many things that will help you succeed as an instructor at The Ohio State University is knowing the mission of the university and the background of its students. What is Ohio State about—both historically and currently? What is its mission? Who are its students? How does your teaching correspond to the needs of the students and institution?

To answer these questions, this chapter will provide demographic information about Ohio State and its students. This information will be valuable as you apply effective teaching techniques in your classroom. Much of the following has been excerpted from the University Profile and Student Profile, the Diversity Plan, the Academic Plan, and the Ohio State International TA Handbook.

## University Profile

### The University's Beginnings

Ohio State's roots go back to 1870, when the Ohio General Assembly established the Ohio Agricultural and Mechanical College. The new college was made possible through the provisions of the Land-Grant Act, signed by President Lincoln on July 2, 1862. This legislation revolutionized the nation's approach to higher education, bringing a college degree within reach of all high school graduates.

The college's curriculum was a matter of bitter dispute among politicians, the public, and educators. One faction, the "narrow gauge" group, held that the college should devote itself solely to the teaching of agriculture and mechanical arts. The "broad gauge" faction wanted a wider program that featured English and ancient and foreign languages as well. Joseph Sullivant, a member of the first Board of Trustees, pushed the "broad gauge" idea through the Board of Trustees, where it passed by a margin of eight to seven. His legacy endures; Ohio State continues to offer a broad-based, liberal arts education, and a diverse range of study.

Classes began at the new college on September 17, 1873. Twenty-four students met at the old Neil farm just two miles north of Columbus. In 1878 the college's name was changed to The Ohio State University. In that same year the first class of six men graduated, and in 1879, the university graduated its first woman. There have been 486,291 degrees granted through December 1998.

### The University Vision and Mission Statement

The Ohio State University has as its mission the attainment of international distinction in education, scholarship, and public service. As the state's leading comprehensive teaching and research university, Ohio State combines a responsibility for the advancement and dissemination of knowledge with a land-grant heritage of public service. It offers an extensive range of academic programs in the liberal arts, the sciences, and the professions.

With the leadership of President William E. Kirwan and Provost Edward J. Ray, Ohio State has recently developed two major strategic initiatives to move the university towards academic excellence. These initiatives are the Academic Plan and the Diversity Action Plan. Following is a brief description of each. For additional information about these plans and what implications they may have for your teaching experience at Ohio State, go to the Ohio State web site (http://www.osu.edu).

### Academic Plan

The Ohio State University aspires to become one of the world's great public research and teaching universities. The Academic Plan is the initial roadmap for the journey to academic excellence. With few exceptions, it is expected that the initiatives identified in it will be realized in the next five years. The plan includes several core elements:

- becoming a national leader in the quality of our academic programs
- being universally acclaimed for the quality of the learning experience we offer our students
- creating an environment that truly values and is enriched by diversity, and
- expanding the land-grant mission to address our society's most compelling needs

These core elements were fundamental to the preparation of this plan. They are reflected in the

six strategies (in which are derived 14 supporting initiatives), which are consistent with Ohio State's vision and circumstances:

1. To build a world-class faculty.
2. To develop academic programs that define Ohio State as the nation's leading public land-grant university.
3. To improve the quality of the teaching and learning environment.
4. To enhance and better serve the student body.
5. To create a more diverse university community.
6. To help build Ohio's future.

The university is currently revisiting the vision for its future and candidly assessing its current position, strengths, and weaknesses. A strategy to acquire the resources necessary to support this plan is underway and benchmarks will be consulted regularly to monitor progress with the plan.

## Diversity Action Plan

The main goal of the plan is to be a national model for diversity and become one of the most welcoming campuses in the country. This plan is an official, university-wide action plan with identified goals and concrete strategies for achieving them. Some of the key initiatives are as follows:

- to appoint a Diversity Council that will guide and monitor progress;
- to provide seed funding for the creation of an Institute for the Study of Race and Ethnicity in the Americas;
- to authorize new funding for scholarship programs designed to increase diversity;
- to establish a multicultural center;
- to collect and monitor data on the recruitment, retention and graduation rates of minority students as contrasted with overall rates and to suggest means to improve these;
- to collect affirmative action data for faculty positions and have employment law and sexual harassment training for leaders and supervisors;
- to promote access for persons with disabilities through Student Affairs and the libraries;
- to fund education programs promoting understanding and respect for gay, lesbian, bisexual, and transgender persons; and
- to set aside endowment funds to support innovative academic and student initiatives related to diversity.

# University Facts

Ohio State was created under the Land-Grant Act with the mission of allowing all Ohio students to have the opportunity to go to college. The university has grown into a large institution and can appear intimidating to both instructors and students. Reasons for this may stem from the fact that Ohio State is currently the second largest college campus in the nation and has a budget of $2.149 billion (2000–2001).

The main campus is in Columbus and there are five regional campuses (Lima, Mansfield, Marion, Newark, and Wooster). The university operates additional programs throughout Ohio such as the Agricultural Technical Institute (ATI) and the Ohio Agricultural Research and Development Center (OARDC). The university also operates its own airport and golf course. The university has a total of 816 buildings, 409 of which are in Columbus (four university buildings are on the National Register of Historical Places).

The Ohio State academic library system is the largest in Ohio and one of the largest in North America. Twenty-seven individual libraries (Columbus and regional campuses) hold 4.9 million printed volumes and 4.2 million microforms.

It takes 31,302 employees, including 10,713 student employees, to make Ohio State run (see table below). It is no wonder why students, as well as instructors, may be intimidated by the size of the university.

| **Employees (Autumn 2000)** | |
|---|---|
| Total | 31,302 |
| Regular faculty | 2,982 |
| Regular clinical faculty | 195 |
| Auxiliary faculty | 1,519 |
| Administrative and professional staff | 9,936 |
| Civil Service staff | 5,957 |
| Student employees | 10,713 |

At Ohio State, students have a variety of choices when it comes to picking a major or degree program. There is an impressive number of academic opportunities from which to choose:

| **Number of Programs (as of 2000)** | |
|---|---|
| Undergraduate majors | 176 |
| Programs leading to the master's | 122 |
| Programs leading to the doctorate | 98 |
| Number of classes | 10,444 |

Students can tailor their education to their interests through a double major, minor, or personalized program. The university also offers more than 80 study abroad programs at major learning institutions overseas.

Since the size of Ohio State is so large, it may surprise you to know that the undergraduate student to faculty ratio is only 14:1. Eighty-nine percent of freshman-level classes have 50 students or less and only 6% have more than 100 students.

## Buckeye Cultural Literacy

One of the most exciting aspects of being at Ohio State is its tradition, particularly in athletics, and any new instructor could benefit from knowing a little bit about that tradition. All good Buckeyes (the school's nickname) know to wear scarlet and gray (the school colors) and that the mascot is Brutus (a big walking buckeye). Ohio State has 34 varsity sports (17 men's and 17 women's) and they play in the NCAA Big Ten Conference. Football games at the historic Ohio State Stadium—nicknamed the 'Shoe because it was built in the shape of a horseshoe) are very much a part of the tradition at the university for many students, alumni, and even some instructors. Some instructors even take advantage of the common knowledge of football by comparing concepts in their classes to aspects of an Ohio State football game.

## Student Involvement

In addition to taking classes and going to athletic events, many students are involved in student organizations. The Office of Student Activities and Campus Programs (http://www.osu.edu/student-activities) offers literally hundreds of student organizations, including such groups as the Amateur Radio Club, Habitat for Humanity, and Undergraduate Student Government. There are 23 sororities and 38 fraternities at Ohio State. The university can also boast that it has the largest recreation and intramural program in the nation.

# Student Profile

Instructors at Ohio State encounter a diverse, yet exciting undergraduate student body. The more an instructor understands that student population, the better he or she is able to respond in an appropriate manner in teaching a diverse student population. The more time spent getting to know students, the better the instructor's understanding of how students approach their studies and what motivates them to learn. In the following section, a demographic profile of students is provided. In Chapter 2, this information will be useful as issues of learning styles, motivation, and diversity are discussed.

## Who is the Ohio State Student?

The total enrollment of students at Ohio State and its area campuses is approximately 55,000. Of this total, approximately 42,000 are undergraduates, 2,800 are professional students (medicine, law, dentistry, pharmacy, optometry, allied medical professions, nursing), and 10,000 are graduate students (see table below for exact figures). This total reflects all of Ohio State's campuses (Columbus, Lima, Mansfield, Marion, Newark, and Wooster). The Columbus campus has the second largest single campus population of undergraduate and graduate students in the nation (the University of Texas at Austin has the largest). Approximately 85% of the undergraduate students who attend Ohio State are from the state of Ohio and come from a variety of social, economic, and cultural backgrounds. The four states (excluding Ohio) in descending order that show the largest enrollments at Ohio State are New York, Pennsylvania, Michigan, and California.

| **Enrollment (Autumn 2000)** | |
|---|---|
| Total, all campuses | 55,043 |
| Columbus campus | 47,952 |
| | |
| Men | 26,890 |
| Women | 28,153 |
| | |
| Undergraduates | 42,314 |
| Graduate students | 9,908 |
| Professional students | 2,821 |
| | |
| Ohioans | 44,569 |
| | |
| International students | 4,046 |

It comes as no surprise that if the student body of the university were to be characterized by one word, that word would be "diverse." Ohio State students come from every state in the nation and from over 100 countries of the world. They range in age from younger than 17 to over 70. Some are married with children; others have never lived on their own.

The undergraduate student population, however, is more homogeneous and regional than the graduate student population. The great majority of undergraduates are white, under 24 years old, and from Ohio. Some have never been outside Ohio or encountered many different kinds of settings or students in their past experience.

Approximately 18% of the Ohio State student population identify themselves as minority students (see table below). The university reaches out to racial and ethnic minority groups, and enrolls African American, Native American, Asian American, and Hispanic American students.

**Enrollment, Minority (Autumn 2000)**

| | Number | % of Total |
|---|---|---|
| Total minorities | 7,990 | 14.5% |
| African Americans | 3,627 | 6.5% |
| Asian Americans | 2,557 | 4.6% |
| Hispanics | 951 | 1.7% |
| American Indians | 200 | 0.3% |

## Enrollment of International Students

The university enrolls international students from other countries in North and South America, Europe, Asia, Africa, and Australia. The five countries in descending order that show the largest enrollment at Ohio State are the Republic of Korea, the People's Republic of China, Indonesia, Taiwan, and India. The total number of international students currently enrolled at Ohio State is approximately 4000, representing approximately 120 different countries. Of this total, approximately 30% are undergraduates and approximately 70% are graduate students. Approximately 23% of the total graduate student population at Ohio State is international.

## The Employed Ohio State Undergraduate Student

Many of the undergraduate students at Ohio State have job responsibilities while attending college. It will not be uncommon to have students in your class who are employed and attending classes either full-time (12 credit hours or more) or part-time.

A survey of Ohio State undergraduates conducted in 1997 investigated the amount of time spent employed while enrolled in school. Of the 400 students who participated in this survey, 339 (85%) were employed while they were enrolled. You may have both older and traditional-aged students in your classroom who have other responsibilities. Students reported that being employed while in college delayed their graduation; they still did well in school, showing a mean cumulative grade point average of 3.06. Of the 339 surveyed students who were employed while they were enrolled:

- 30.1% were employed on campus
- 41.6% were employed off campus
- 28.3% were employed both on and off campus
- 30.4% were employed the entire time they were a student
- 40.7% were employed more than 20 hours a week
- 52.2% were employed between 10–20 hours
- 11.8% of the graduates indicated that they took a smaller class load to give themselves more time to work

Some reasons that students gave for being employed while taking classes at Ohio State include earning extra money; paying for books, tuition, fees, and other educational expenses; paying for living expenses; and gaining practical experience for future employment.

One of your responsibilities and challenges as an instructor will be understanding how to appreciate and accommodate the diverse backgrounds and talents of the students in your classroom. In 1999, of the total undergraduate student population, approximately 86% enrolled full-time and 14% enrolled part-time. Full-time undergraduate students will usually take between 15 and 17 credit hours each quarter, and usually will attend three quarters per year, taking one quarter off to work or to take a break from academic life. Following this schedule, students can expect to finish an undergraduate degree in some 12 quarters over four calendar years. However, looking at graduation rates, approximately 20% of an incoming freshman class will graduate in four years, another 29% will take five years, and still another 8% will take six years to graduate.

There are several reasons why more students do not graduate in four years. Apart from working to support themselves, many students have their studies interrupted by illness, family emergencies, or by opportunities for employment; some transfer to other institutions; and, in some cases, the number of credit hours required for a particular

major makes it difficult to graduate within a four-year period.

## Admission to Ohio State

Ohio State has a competitive admissions process for new freshmen in which students are admitted to the Columbus campus based on academic considerations. While many factors weigh into the admissions process, the three main considerations are the completion of a college-preparatory curriculum, high school class rank, and performance on the ACT or SAT. The minimum college preparatory curricular requirements—including four years of English, at least three years of math, two years each of natural science, social science and the same foreign language, and one year of a visual or performing art—are exceeded by the vast majority of admitted students, resulting in a considerable reduction in remedial instruction at the university.

Admission to the university does not guarantee admission to a specific major program or college. Once it is determined that a student is admissible to the university, he or she will be considered for admission to an intended college of enrollment and major program. This decision is based on his or her intended major and the college's particular admission requirements, which may include a minimum GPA, prerequisite courses, or a combination of both.

The top four areas of interest to the entering class of 2000 were Arts and Sciences (36%), Undecided (20%), Engineering (16%), and Business (14%). These are only student interests coming into Ohio State and do not necessarily reflect their eventual majors.

## Class Profile (Autumn 2000)

As the admission process has become more selective, students are coming to Ohio State with more extensive high school achievements. In the freshman class of 2000, there were 104 National Merit Scholars, 11 National Achievement Scholars, and 696 University Scholars. More than two-thirds of today's Buckeye undergraduates come from the top quarter of their high school graduating classes, and nearly one third come from the top 10%. The mean composite ACT score for enrolling undergraduates is above a 25 (SAT equivalent is approximately 1180), more than four points above the national average of 21. The improvements in the overall preparation of admitted freshmen have resulted in changes that university instructors notice in their classrooms: students are more engaged in the curriculum and classroom discussions and are leaving the university with degrees in steadily increasing numbers.

## What Happens after Admission to Ohio State?

Once a student has accepted admission to Ohio State, the next step is to attend a two-day orientation program during the summer. During orientation students learn about Ohio State; take placement tests in mathematics, foreign language, and perhaps English; and schedule classes for autumn quarter.

National research suggests that an undergraduate's first year is critical to overall success and the likelihood of graduation. Accordingly the university has introduced a new collaboration and a new focus on first-year students: The Office of Undergraduate Admissions and First Year Experience (FYE). Bringing together the offices of Undergraduate Admission and University Orientation, FYE extends the personal touch of the student recruitment and orientation processes to new students during the critical first year at Ohio State. "FYEfforts" for the Class of 2001 include university orientation, freshman convocation, The Buckeye Book Community (a campus-wide readership program which brings acclaimed authors to campus), retention initiatives, and a First Year Community seminar series.

## Special Programs

There are several opportunities for students to participate in special academic and enrichment programs during their time at Ohio State.

*Honors Programs*. Ohio State's Honors Programs give our most talented students the opportunity to enhance their undergraduate experience and interact with a gifted student community that includes more than 425 National Merit, National Achievement, and National Hispanic Finalists, and more than 2,000 University Scholars. The university offers more than 240 Honors courses each year, in classrooms averaging fewer than 25 students. Qualified students typically come from the top 10% of their high school classes and have a 29 or higher ACT composite or 1300 SAT combined score or higher.

*Scholars Programs*. The Ohio State Scholars Programs give first-year students the opportunity to integrate their academic work with their life outside the classroom. The programs bring together students who share similar academic and professional goals, enabling them to attend selected classes together and live in specially designated residence halls. Scholars typically have ACT composite scores of 25 or higher (or SAT combined scores of 1140 or higher) and come from the top 20% of their high school classes. In 2001–2002, the programs are:

- Arts Interdisciplinary Scholars Program
- Biological Sciences Scholars Program
- Communication Technology Program
- Health Sciences Scholars Program
- Humanities Scholars Program
- Undecided Liberal Arts Scholars Program
- The Mount Leadership Society
- Tomorrow's Teachers Scholars Program

*Living/Learning Programs*. Ohio State offers a variety of academic, cultural, and lifestyle residential environments—called Living/Learning Programs (LLPs)—in residence halls across campus. The LLPs include academic communities like Engineering, Social and Behavioral Sciences, and Visual and Performing Arts; cultural communities, including International House and Afrikan-American; and lifestyle communities, such as Substance-Free Living and Study-Intensive Living.

## How Students Choose Courses

Students will enroll in your courses for many reasons. Before scheduling at orientation, academic advisors will introduce students to the curricular requirements in their chosen field of study. Some fields require many specific courses; other fields are more flexible in the courses that students can take in their program. Students may be required to take your class for their major or minor. Students may choose your course to meet an undergraduate General Education Curriculum requirement (GEC) or hey may choose a course because of an interest in the topic, because the time is convenient, or because they have heard the course is easy (and then they discover how hard it is!). In summary, the students in your classes will be there due to various motivations, and their level of interest in your subject matter will vary. An important part of your job as an instructor is to stimulate enthusiasm for your subject among those students whose interest may be low. Motivation will be discussed in depth in Chapter 2.

# 2: How Students Learn

As a visiting lecturer at Ohio State some years ago, Professor Tony Grasha of the University of Cincinnati titled his talk, "How Can I Teach You If I Don't Know How You Learn?" Although Grasha's question seems perfectly logical, quite amazingly, colleges and universities have traditionally had no formal requirements for any study of learning theory in the backgrounds of the people they hire to teach. The long-standing assumption has been that if one knows a body of knowledge, one can teach it. Recently, this assumption has been questioned and more systematic efforts to prepare graduate students and new faculty for teaching have been undertaken. Knowing how students learn involves exploring theories of cognition and motivation, knowing the backgrounds of the students one will teach, and being aware of differences in learning styles and stages of development among one's students.

The material offered here will provide an overview of current learning theory, some constructs that have been used by researchers to organize descriptive information on students' ways of learning, and implications for instructors.

## Ideas on How Learning Occurs

Ideas on how human learning occurs are explored primarily by psychologists. A very powerful explanation posed by a group of theorists taking what has come to be called the *behaviorist-associationist approach* has for years dominated thinking on how people learn. Some tenets of this theory are that people learn through associations and that a given stimulus will produce a response. The well-known example is Pavlov's classical conditioning exercise of the salivating dog. Learning is viewed as the building up of habits of association. Repetition, especially followed by positive reinforcement, promotes learning. The teacher breaks up knowledge into small, logically organized bits of information and provides reinforcement for students to learn. Many of the approaches in college teaching today, such as behavioral objectives, hierarchical curricula, and objective testing, are the legacy of behaviorist-associationist thinking.

More recently, the *cognitive approach* has been favored as an explanation for how people learn in settings such as college environments, where knowledge is complex and process is as important as recall of facts. Cognitive psychologists focus on memory, reasoning, and tasks such as critical thinking and problem solving. They are most interested in how learners construct meaning as they encounter new information and try to fit it in with what they already know. These theorists describe learning as a process of accommodating new information into existing frameworks that the learner has established for fitting pieces of information together. At times, new frameworks must be constructed as well. Good explanations of learning theory applied to college teaching are contained in Bruning (1994) and Casazza and Silverman (1996).

Svinicki (1991) outlines six principles of learning based on cognitive theory and their implications for instructors:

1. If information is to be learned, it must first be recognized as important.
   *Implication:* The more attention is effectively directed toward what is to be learned (that is, toward critical concepts and major areas), the higher the probability of learning.

2. During learning, learners act on information in ways that make it more meaningful.
   *Implication:* Both instructor and student should use examples, images, elaborations, and connections to prior knowledge to increase the meaningfulness of information.

3. Learners store information in long-term memory in an organized fashion related to their existing understanding of the world.
   *Implication:* The instructor can facilitate the organization of new materials by providing an organizational structure, particularly one with which students are familiar, or by encouraging students to create such structures.

4. Learners continually check understanding, which results in refinement and revision of what is retained.

*Implication:* Ample opportunities for checking and diagnosis should be given to aid learning.

5. Transfer of learning to new contexts is not automatic but results from exposure to multiple applications.
   *Implication:* Provision must be made during initial learning for later transfer.

6. Learning is facilitated when learners are aware of their learning strategies and monitor their use.
   *Implication:* The instructor should help students learn how to translate these strategies into action at appropriate points in their learning.

Some suggestions for instructors were made by Svinicki (1994) in a guest lecture at Ohio State:

- For activating prior knowledge before learning, instructors can ask students to fill out a prelearning checklist, a preconceptions/misconceptions checklist, or brainstorm on what they already know that is related. During learning, instructors can make ample use of analogies, familiar examples, and comparison with topics that were previously treated.

- To help students actively process new information, instructors can emphasize the organization of the ideas by having students fill in empty outlines or making concept maps that show relationships with other ideas. They can encourage students to summarize by asking them to paraphrase at given intervals or write a short summary of their understanding after a class or reading. Instructors can promote active involvement in learning by fostering peer dialogue and speaking, problem solving, and writing.

- To help students become more aware of their own learning, instructors can have students document in writing the steps they took to solve a problem or arrive at a conclusion, discuss their learning approach and assess their own progress, and use peers as process observers who give feedback on the observed approaches to tasks and assignments.

## The Role of Motivation and Classroom Environment

Cognitive psychologists also emphasize the internal motivation of the learner (as opposed to external stimulus) and the role of social communities in learning. Theorists such as Pintrich (1994) and Perry, Menec, and Struthers (1996) point out that motivation is affected by both student and classroom factors. Students' beliefs about whether they are in control and competent to perform a learning task as well as the nature of the tasks, the reward and goal structure, the instructional methods, and teacher expectations and behaviors can affect learning. They suggest that teachers help students use "effort" as an explanation for their learning results rather than "luck," and teachers provide variety, an appropriate level of challenge, a collaborative rather than competitive ethos, and sufficient organizational structure for learning. Wlodkowski and Ginsberg (1995) focus on student diversity in discussing motivation. They argue that students at the margins have particularly high needs for support. They suggest that teachers work hard to establish a sense of inclusion so that students feel respected and connected to one another; that they use relevance and choice to create a sense of self-determination; that they engage and challenge students to enhance meaning; and that they create a sense of competence in their students. Also focusing on instructor actions and classroom climate, McLeod (1996) distinguishes between "deep learning states" and surface learning, emphasizing that low stress learning environments that promote interpersonal interaction and create an atmosphere of caring and open reflection are more likely to foster deep learning.

Effective teachers realize that teaching is more than simply "laying out the feast of knowledge" and hoping that students will be motivated enough to partake. Teachers can have significant impact on levels of student motivation through exciting interest and encouraging learning as well as in introducing information. Instructors who excel in inspiring students argue that creating a good classroom environment for learning is fundamental to their success. James Knight, a former Ohio State faculty member, lists nine tips for improving the classroom climate:

1. *Make students feel important.* Knight argues that instructors who value students avoid

condescension, sarcasm, and impersonal behavior, and cultivate self-esteem through praising good performance and taking a personal interest in students.

2. *Make students feel invited.* In a number of studies of student retention, the presence or absence of a close relationship with an instructor is cited as a factor which influences retention. Instructors who make students feel invited, both in class and outside of class, have a strong impact on motivation.

3. *Deal with needed changes from a positive point of view.* Honest and frequent feedback is essential to good learning, but even very critical feedback can be offered in a constructive way. Instructors can usually find some good point to praise and can suggest specific ways in which unsatisfactory performance can be improved.

4. *Learn to make nonverbal cues.* Good eye contact, smiles, and active listening skills such as nodding, help motivate students.

5. *Get to know students personally.* Knight cites instructors who request that all students visit them personally outside of class to chat informally and instructors who have lunch or coffee with students as examples of those who understand that a personal acquaintance enhances the teaching-learning relationship.

6. *Learn to empathize.* Instructors who remember some of the hardships, uncertainties, and stress of their own student days are better able to help their students who are undergoing those difficulties.

7. *Establish parameters.* Knight feels that instructors who clearly define tasks and set high expectations for behavior and learning are better able to motivate students.

8. *Use student-centered instruction.* Student-centered instruction involves planning learning activities that will actively engage students and will anticipate the kinds of opportunities and challenges that will be present in a specific area.

9. *Be enthusiastic.* Most instructors find their discipline compelling, but sometimes it is hard to recapture excitement about a familiar topic. Trying to look at the familiar in a new light or to present things in fresh ways are strategies instructors use to maintain their enthusiasm. It is said that enthusiasm shows—so does its absence.

Integral to any discussion of motivation is "personalizing" the classroom. Using instructional strategies that enable some individualization of instruction or small group work helps develop personal investment and interest in learning. Similarly, direct attempts of instructors to talk about such things as their own life experiences related to the subject and their personal difficulties in mastering certain concepts create a warmer classroom climate.

As discussed in Chapter 1, Ohio State students come from a variety of backgrounds. It would be appropriate to assume that they would also have a variety of motivations for learning and widely differing levels of motivation. Even if students are willing to work hard and learn while in school or are capable of doing good work, there are external factors that may inhibit them from succeeding.

## Reasons for Being in College and in Class

There is an incredibly wide range of reasons for why your students are in college and specifically why they are in your class. Keep in mind that their reasons may differ from your reasons for going to college and for having an interest in your field. Some students come to college with noble goals of self-edification and some come with practical goals of receiving knowledge, training, and experience. Some come for social reasons (prestige, partying) or for the sake of "getting a degree" because it is the next step expected of them after high school. As educators we generally hope that the latter reasons eventually turn into the former, and we should all participate in encouraging that transformation. Likewise, students enroll in specific classes for a variety of reasons, from a deep passion for the subject, to teacher reputation, to a pedestrian interest in the subject matter, to requirements for majors and graduation, to parents' insistence, to scheduling limitations which necessitate that they take *any* class at that time. In addition, some students come with a strong desire to succeed and a network of family and friends who are constantly supporting and encouraging them. Others may be the first in their family to go to college, and thus

are here without the sense of tradition or their family's understanding of the difficulty and of the life-changing processes of the new experience. This type of motivation and support in particular have a profound effect on student dedication and success.

### Vying for Student Time and Attention

We are also soon made aware that we may not be perceived as the hottest ticket in town. Even if students are motivated to study and learn, there are other temptations and obligations which vie for their attention: the draw of social events, concerts, sporting events, television, the Internet, Greek life, work, recreational sports, new romances, and family matters. And then there are their other classes. Being aware of our "audience" makes us more effective teachers, not by pandering to students' wishes and likes, but by understanding how they learn, how they got here, what they need, and the wide range of obstacles hindering their success, and then addressing each of these in how we teach.

## Theories of Learning Motivation

In addition to these factors which affect motivation, there is also the psychological or cognitive element in motivation. How students perceive their competency and how they judge the amount of control they exert in the learning process greatly affects how they will perform. Several learning motivation theories are briefly outlined below. Implications for instructors will also be provided. This section on learning motivation theories has been adapted from Cross and Steadman (1996).

### Self-Efficacy Theory

The self-efficacy theory of learning motivation places emphasis on a person's beliefs about their ability to learn. Some believe that ability is something that a person is born with and is seen as a permanent, fixed trait. Others believe that ability is expandable and that people can be successful through hard work. This incremental view of ability motivates them to take on challenges to increase their knowledge and to never give up when tasks become very difficult.

For others, beliefs about their lack of ability to learn are more important than actual skill levels. Students sitting in class may have high intelligence but lack confidence in their ability to complete tasks successfully. If they lack confidence (they do not believe they were born with that trait), they will approach learning challenges with dread. They will typically avoid challenge and choose easy learning tasks which they are confident they can perform, ultimately ensuring some level of success.

### Attribution Theory

Attribution theory states that motivation depends on the reasons to which people attribute their success or failure when completing various tasks. There are several ways of categorizing the attribution or cause of outcomes:

*Locus.* The cause is internal (ability) or external (teaching/exam) to the learner.

*Stability.* The cause is permanent (intelligence does not change) or temporary (effort can be modified).

*Controllability.* The actor has or does not have power or control in success or failure (no control over exam questions; control over own ability).

According to this theory, students may be less motivated to learn when they believe they are powerless over their success. They may assume that their ability is permanent and cannot be changed, leading to problems with self-confidence. Additionally, for students who believe that they have no control over the success of a learning task (e.g., exams are unfair, they were not born with high intelligence), they may lack the motivation to put a lot of effort into learning tasks.

### Self-Worth Theory

In a competitive academic environment, most students want to preserve their sense of self-worth, which is based on their self-perceived ability to complete tasks successfully. Students who have been successful in their academic endeavors feel good about themselves, while those who have not done well question whether their failure is due to either their ability or effort (being dumb versus being lazy). Most people would rather have others (and themselves) question their effort and not their ability. Unfortunately, both potential causes come with negative emotions. If people fail at a task while putting in a lot of effort, they feel shame; if failure is due to a lack of effort, they feel guilt.

Using the self-worth theory, an inherent conflict exists between student and instructor values about effort. Instructors reward effort, yet students take a risk putting forth a lot of effort when faced with a challenging task that they perceive as having a low probability of success. In order to avoid shame from failing due to a lack of ability, some students may not try hard to succeed, may procrastinate on difficult tasks, or may select an easier learning task with less risk. It is interesting to note that some students avoid failure in the classroom (or excuse it) in a more socially acceptable way such as becoming overly involved in extracurricular activities.

According to the concepts of the self-worth model, there are four different (although not mutually exclusive) patterns of student motivation:

*Success-Oriented.* These students enjoy learning for the sake of learning. They are confident in their success because they have succeeded in the past. Despite some failures in the past, they will continue to take on learning tasks.

*Overstrivers.* These students are never entirely confident in their ability to succeed. They strive for high academic achievement in order to prove their ability to themselves and others. These are usually the students who study very hard and still have very high anxiety about succeeding.

*Failure-Avoiders.* Students in this category escape testing their ability by avoiding challenges that pose a risk of failure. They have high anxiety but may not always be successful.

*Failure-Accepting.* These students have given up trying to succeed. They are not necessarily satisfied with success, but not unhappy with failure either. Since they do not expect much success, there is not a lot of shame in failure. These are typically the students who never check on their grades after exams and never seek out help from instructors.

## Implications of Learning Motivation for Instruction

Keeping all of the information given above in mind, instructors may want to take the following measures to maximize their students' chances for success.

*Identify student goals.* Students attend college and take specific courses for a variety of reasons based on different goals (occupational, educational, social, etc). All of these goals influence their motivation to learn. Many may not come to college with clear, specific goals, and this in turn affects the amount of importance they will place on certain courses and the amount of time and energy they will allot to learning the material. Some students desire or otherwise need guidance in identifying or clarifying their goals. Many need to be shown (or convinced of) the relevance of the course to these goals and to their lives in general. Instructors, therefore, need to identify this relevance while designing the course, discuss it at the beginning of the course, and reinforce it frequently.

*Assess motivation.* In *Classroom Assessment Techniques* (Angelo & Cross, 1993) instructors can find numerous tools to help uncover their students' motivations for learning. For example, conducting a Course-Related Self Confidence Survey allows students to rate their self-perceived confidence in topics related to the course. The Focused Autobiographical Sketch can be used early in the course to help instructors determine how their students' past successes and failures may be related to their willingness to take on learning challenges which are important to the course. Tools like these can be valuable in looking for ways to modify curriculum and adjust teaching strategies that will allow the most success in their students' learning.

*Challenge and encourage.* Instructors can increase students' optimism for potential success and consequently decrease their fear of failure by providing moderate, non-threatening levels of challenge. The rationale is based on the fact that students' perception of their ability to succeed depends on both their perception of the level of difficulty and their self-confidence in their ability to succeed in that task. Allowing students to revise their own work, giving them choices in assignments, and always providing some amount of positive feedback on all learning tasks will increase their sense of control, responsibility, and mastery.

*Tap into intrinsic motivation.* By learning to make meaning of something and being able to use new information, students begin to have an intrinsic motivation to learn. All too often, students are accustomed to working for extrinsic motivating factors such as fulfilling requirements, grades/rewards, and avoiding punishment. In order to help students foster intrinsic motivations, instruc-

tors should avoid the excessive use of grades or penalties (less emphasis on substance and more on performance), be enthusiastic about the course content, provide relevant examples that connect with existing knowledge, actively discuss and review what they have mastered so far, and apply principles such as problem-based learning early on in the course.

## Student Preparedness

Although learning theory provides a general entry to the question of how students learn, college teachers must also be aware of differences in learning across individuals. One of the most difficult issues in beginning to teach a new group is assessing the entry level of the students (i.e., level of preparation in and previous experience with the subject matter, level of cognitive development, repertoire of learning styles, level of interest and motivation). This knowledge is extremely important to effective teaching; a poor understanding of the needs and abilities of students can result in teaching that is at an inappropriate level of difficulty or is irrelevant to the needs of the students. There are several quick ways of assessing this entry level at the beginning of the term. In *Classroom Assessment Techniques*, Angelo and Cross (1993) discuss different means of determining prior knowledge, preconceptions, and misconceptions. Methods for assessment include student information cards (asking for previous experience, reasons for taking the class, etc.), an ungraded previous knowledge quiz, and class brainstorming on the subject matter of the class.

## Different Learning Styles and Their Implications for Teaching

Chapter 1 of this handbook provides a demographic portrait of the Ohio State undergraduate population. Equally important to teaching is some understanding of how these students are likely to differ in the ways in which they learn. Three broad categories of descriptive literature on students' ways of learning will be discussed here. They include cognitive development, cognitive style, and differences based on age, disability, gender, and cultural background.

## Cognitive Development

The most widely known work on the cognitive development of college students is *Forms of Intellectual and Ethical Development in the College Years* by William Perry (1970). Although Perry's study was completed some time ago and was based on a small sample of students from Harvard and Radcliffe, the scheme of development that he described has proven helpful in understanding students in many different settings. Perry concludes that students move through stages of cognitive development, each of which is qualitatively different and more complex than the previous stage. As students move through these stages, the ways in which they perceive, organize, and evaluate experiences and events in their lives change. Perry (1970, p. 9) describes nine positions, of which the first six pertain most directly to cognitive development.

### Dualistic Stages

Perry uses the term *dualistic* to describe the first three positions. The ways in which students at these stages differ are based on how they account for uncertainty:

*Position 1*. All information is either right or wrong. Uncertainty is not perceived.

*Position 2*. All information is either right or wrong, and where uncertainty seems to exist, it is really an error committed by a wrong authority.

*Position 3*. All information is either right or wrong, but uncertainty is acceptable in areas where experts do not know the answers yet. Someday the right answer will be discovered or found.

Students in the dualistic stage are often confused or hostile in a classroom setting in which multiple points of view are presented. They want "just the facts, please" and do not want to hear that there are conflicting opinions. They want the teacher to be strong, authoritative, and clear in the position that is taken. These students are apt to view their roles as passive recipients of a body of knowledge and will often resent being asked to play an active role in class. They regard the teacher as the person who already has the knowledge and may not feel that there is any value in contributing an opinion or listening to the opinions of their fellow students.

Students in Positions 1 and 2 are able to learn (often by memorizing) basic facts and definitions of words and concepts, identify parts of a whole, begin to compare and contrast, and provide an explanation of why they answer as they do. In Position 3, the student can compare and contrast and see multiple perspectives, parts, opinions, and evaluations. The student can do basic analytic tasks but needs to learn to use supportive evidence.

## Relativistic Stages

Perry uses the term *relativistic* to describe students in Positions 4–6. During this phase, the students' previous categories of right and wrong are transformed. Knowledge is now seen as uncertain or valid only within a context. The positions are differentiated by the following traits:

*Position 4*. The student begins to feel that most questions cannot be answered with absolute certainty and, when uncertainty prevails, feels that all answers are of equal value.

*Position 5*. The sense of relativism enlarges and the student begins to form nonabsolute criteria for making judgments.

*Position 6*. The ability to make judgments increases and a personal stance or commitment develops.

Students in Position 4 can compare and contrast, do abstract analysis, and do some synthesis. They can do both positive and negative critiques and use supportive arguments well. At this stage, the student is developing the capacity to relate learning in one context or class to other issues in other classes or to issues in real life.

In Positions 5 and 6, the student can relate learning in one context to learning in another with some ease and can look for relationships in learning. The student can evaluate, conclude, and support his or her own analysis and can synthesize various points of view. Finally, the student learns to modify and expand concepts of knowledge, and perhaps generates new ways of looking at a given question or formulates new questions.

## Implications for Teaching

Administration of instruments designed to assess cognitive development in terms of Perry's scheme has revealed that, although students of a given age category vary in their cognitive levels, most college students in the traditional age range of 18–24 enter at the dualistic stage and many progress toward the advanced relativistic stage as they go through college. Some enter at higher levels and some will not progress, so one cannot assume homogeneity in a group of a given age. Nevertheless, a general guideline is that most seniors can perform cognitive tasks that most freshmen cannot and instructional expectations should be based on this general guideline.

Widick, Knefelkamp, and Parker (1975) use the notions of challenge and support to draw implications for teaching based on Perry's theory. They argue that students at a given level need to be stretched or challenged to continue to reach higher levels but also need support to handle the challenge. They caution that one cannot expect students to skip over developmental stages; tasks must be at or only slightly above the student's level. Specific recommendations are summarized below.

## Students in the Dualistic Stages

Teachers can *challenge* their students to move on to other levels by:

- employing content diversity in the curriculum by presenting two or three (but not more than three) points of view
- assigning different kinds of experiential learning activities and encountering content diversity through activities such as structured discussions, structured group experiences, role playing, and field trips with structured observation guides
- processing experiential encounters in prestructured ways (checklists, outlines, etc.) that emphasize differentiation and the use of evidence to support views
- using a variety of media (e.g., print, video, web) to convey information (equipment and advice can be obtained from Classroom Services, see Appendix)
- incorporating opportunities for the ideas of others to be heard in class

Teachers can *support* students who are at the dualistic stage as they work toward higher levels by:

- responding to student needs for structure by prestructuring activities and by using a syllabus that itemizes such details as specific assignments, policies, and due dates; and using outlines of each class, textbook session, etc.

- preparing handouts that help students fulfill course requirements (e.g., how to do a bibliography, laboratory report format)

- personalizing interactions with student by providing opportunities for students to get to know each other and the instructor; using small group work in or out of class; using feedback techniques such as logs, journals, or response forms; and responding to written work as concretely as possible

## Students in the Relativistic Stages

Teachers can *challenge* the students to move to higher levels by:

- providing them with opportunities to choose positions and defend their choices

- asking them to narrow choices and weigh pros and cons of alternative arguments or choices

- drawing upon course material that stimulates thinking about personal philosophy and life choices

- setting learning tasks that call for students to analyze, synthesize, and evaluate from personal perspectives and then progressively more abstract or experiential perspectives, and that call for students to apply learning from one context to problems in a different context

- posing activities that ask students to generate new questions or evaluate assumptions inherent in how points of view are constructed

Teachers can *support* the students as they move to higher levels by:

- providing choices of assignments and projects and minimizing the structure and guidance provided

- allowing for more flexibility and creativity in formats of written work

- continuing personalization through group work, opportunities for participation, peer teaching, and learning

## Women's Development

Gilligan (1982) and Belenky et al. (1986), aware that the sample for Perry's research was largely male, undertook research on female moral and cognitive development and found different patterns in their sample of women. Belenky and her co-authors described an initial level of silence in which women feel powerless and intimidated by male authority and forms of argumentation. Following this are four more levels:

1. *Received knowledge*. Women at this level are listening to others around them and relying on the voices of authority. They see things dualistically as did the participants in this stage in Perry's study, but identify less with the authority figures. They regard the multiple perspectives they read and hear as increasingly confusing and hard to reconcile.

2. *Subjective knowledge*. Dissatisfied with received knowledge, they turn to their inner voices and trust their own feelings and thoughts at this level. They believe that all opinions are equally valid and that first-hand experience is the only valid route to knowing.

3. *Procedural knowledge*. At this level, women again listen to outside voices, but this time, they are listening to *how* to think rather than *what* to think. They are interested in and aware of multiple perspectives. Belenky et al. borrow from Gilligan, who distinguishes between two kinds of procedural knowledge: separate knowing that relies on analysis, dispassion, and argument; and connected knowing that is holistic in nature, joining emotion with reason and seeking understanding and interconnections among perspectives. Even connected knowers, however, experience a sense of alienation at this stage since their knowledge is so directed toward the other.

4. *Constructed knowledge*. At this level, women are able to integrate their own voices with those of others. They are active builders of a knowledge base and see that "All knowledge is constructed and the knower is an intimate part of the known" (Belenky et al., p. 137).

Although Gilligan and Belenky and her coauthors make the point that given types of cognitive development are not exclusively male or female, they do note that the above pattern is found more in women than men.

Another researcher, Baxter-Magolda (1992) describes stages that have similarities with those found by Belenky and her coauthors. Baxter-Magolda describes four levels of knowing (absolute, transitional, independent, and contextual). Within each of these levels, she distinguishes two contrasting approaches, which are gender-related. These are the interpersonal approach (found more commonly in women) and the impersonal approach (more characteristic of men). Interpersonal learners are more concerned than impersonal learners with sharing ideas (rather than debating them), with seeking rapport with the teacher (rather than being challenged by the teacher), with expecting to be evaluated as an individual (rather than receiving standard treatment), and with using personal judgment (rather than logic and research) to resolve uncertainty. Baxter-Magolda asserts that although men and women pass through similar stages at similar rates in developing cognitive complexity, their approaches toward knowledge tend to be different.

The implications for teaching of the research on cognition and gender include the importance of recognizing that women may often feel overwhelmed and silenced by a discourse style that is not comfortable to them; that they may want to trust personal judgment, instincts, and emotions as valid contributions to arriving at a position; and that they may withdraw from argumentation and forced analysis as hostile or unproductive forms of activity. Instructors can make sure that all students have a voice in class by moderating discussion to ensure equal levels of participation and encouragement and providing opportunities for personal forms of expression in papers and projects. Rowe (1986) and Mansfield (1996) provide examples of how an instructor's attention to wait time can ensure gender equity in the classroom.

# Cognitive Styles

Another way of describing differences in students is based on the idea that people have different ways of learning. Research in this area has mushroomed in the past several years, producing descriptions of styles based on a variety of organizing ideas. A few of the dominant schemes are described below.

## Field Independence and Field Dependence

Based on studies on perception, Witkin and Moore (1975) describe a central differentiating characteristic of learners based on the way in which they handle information in context. They describe *field independent* students as those who try to analyze things into component parts and like to work independently. Field independent students are able to set their own learning goals and prefer the freedom to participate in setting their assignments. They like to work with abstract ideas and prefer to work with a minimum of structure and guidance. Witkin and Moore call learners who perceive in holistic fashion *field dependent* learners. These individuals rely on external stimuli in approaching a task and have a much more difficult time separating the individual parts within a whole. These students tend to be more social in their interests and like teachers to structure classroom goals for them. They prefer group work and student discussion in class.

## Kolb's Learning Styles

David Kolb (1981) posits that four main processes are used in learning:

*Concrete experience*—learning through direct involvement in a new experience

*Reflective observation*—learning through watching others or through thinking about our own experiences or those of others

*Abstract conceptualization*—learning by creating concepts and theories to describe and explain our observations

*Active experimentation*— learning by using the theories and concepts we have derived to solve problems and make decisions

He states that most people apply these four processes in cyclical fashion as they learn, but that each person engages in some activities more than others. Depending on these preferences, he describes four learning styles:

*Convergers* rely most on abstract conceptualizing and active experimenting. They like to find specific, concrete answers and move quickly to solution. They are relatively unemotional and prefer dealing with things rather than with people.

Convergers often specialize in the physical sciences or engineering. They prefer learning tasks that have specific answers.

*Assimilators* rely most on abstract conceptualizing and reflective observation. They like to integrate ideas and are more interested in theoretical concerns than in applications. Assimilators tend to gravitate toward math and the physical sciences and like research and planning. They prefer learning tasks that call for them to integrate material.

*Divergers* rely on concrete experience and reflective observation. They like to generate many ideas and enjoy working with people. They often are attracted to such fields as counseling and consulting. Divergers enjoy class discussion and working in groups.

*Accommodators* rely on concrete experience and active experimentation. They take risks, are action oriented, like new experiences, and are very adaptable in new situations. They prefer a hands-on approach and often are attracted to technical or business fields, such as marketing and sales.

### Learning Modalities

Several researchers have focused on the extent to which sensory receptors influence learning. In general, they describe the following different types of learners:

*Auditory learners* prefer to learn by listening. Lecturing is the teaching approach that works best for them.

*Visual learners* prefer print material. They learn best by reading or responding to visual cues, such as the chalkboard or overhead transparencies.

*Tactile learners* like to manipulate objects. Laboratory or hands-on methods of learning are most appropriate for them.

*Kinesthetic* or *whole body learners* like to learn through experiential activities. They prefer simulations, exploratory activities, and problem-solving.

### Implications for Teaching

As with all of the literature on learning styles, the emphasis with sensory modality preferences is not placed solely on trying to match learning and teaching styles, but on extending the strengths of learners and expanding their range of modalities. A teacher can accomplish this by using a range of activities and having students complete assignments in a variety of formats.

## Cognitive Styles and Culture

Although learning style is not directly related to race and gender, there are research studies that suggest some patterns (Anderson & Adams, 1992). For example, Irvine and York (1995), in a review of the extensive published research findings on learning styles and culturally diverse students, found that African American, Native American, and Hispanic students often have a learning style referred to as *field dependent learners* (some writers prefer to use the terms *relational, field sensitive,* or *global learners).* This suggests that these students achieve best when working in groups on verbal tasks. Research further indicates that they learn more easily those materials that have humor, social content, and are characterized by the use of imagination. In learning situations, they are most sensitive to the opinions of others. This particular learning style often conflicts with the traditional school environment, which tends to favor individual and competitive learning processes. In contrast, many European American men and Asian American students are *field independent* learners. Therefore, they tend to perform better on analytical tasks, learn more easily material that is inanimate and impersonal, and not be greatly affected by the opinion of others as they perform Anderson, 1988).

## Cognitive Styles and Teaching Strategies

The differences in cognitive learning styles have distinct implications for preferences in student instruction and teaching strategies. According to Anderson and Adams (1992), an initial approach for instructors might be to develop a sense of the expectations that students and instructors bring into the classroom. Such interactions guide the more formal dimensions of the teaching-learning dyad. One example of the expectations that two different types of students exhibit is outlined on the following page.

## What Students Expect from Instructors
**(based upon preferred style)**

| *Field Dependent Orientation* | *Field Independent Orientation* |
|---|---|
| To give support, show interest, be emotional | To focus on task and be objective |
| To provide guidance, modeling, and constructive feedback | To provide independence and flexibility |
| To provide verbal and nonverbal cues to support words | To provide commands and messages directly and articulately |
| To minimize professional distance | To maximize professional distance |
| To seek opinions when making decisions and to incorporate affective considerations | To make decisions based upon analysis of problem and objective criteria |
| To identify with values and needs of students | To identify with goals and objectives of task |

## A Comparison of Teaching Styles Based upon a Similar Orientation
**(field dependent and field independent teaching strategies)**

| *Field Dependent* | *Field Independent* |
|---|---|
| Focuses on needs, feelings, and interests of students | Focuses on task |
| Acts as a consultant or supervisor in the classroom | Fosters modeling and imitation |
| Uses an informal approach—elicits class discussion | Uses a formal, lecture-oriented approach |
| Uses personal rewards | Uses impersonal rewards |
| Encourages group achievement | Encourages individual achievement |
| Narrates and humanizes concepts | Emphasizes facts and principles |
| Identifies with class | Remains emotionally detached |

Teaching in a diverse classroom means that there will be many different learning styles. Effective teaching cannot be limited to the delivery of information, but needs to be based on a model of minds at work. The generative process of learning is most effective when instructors both affirm the presence and validity of diverse learning styles, and also maximize the climate or conditions for learning in the classroom (Anderson & Adams, 1992). While instructors should be aware of differences when identifying learning styles with particular groups, they also should still use a full range of instructional strategies in order to stretch the experience and learning repertoire of all of their students.

## Differences Based on Age, Disability, Gender, and Cultural Backgrounds

Researchers who study the learning styles of socially and culturally diverse populations—students not traditionally a part of the college enrollment—have made observations about the particular ways in which these students can learn most effectively. These archetypes, developed to aid the learning of nontraditional students, can help instructors be more aware of the needs of their students. In order to avoid assuming that all members of a given group display characteristics that have been associated with the group as a whole, however, it is important for the instructor to consider carefully whether general characteristics associated with a group of learners are descriptive of a particular student in the course. A summary of some of the characteristics of different learners is included below.

### Nontraditional Age Students

Many nontraditional age students lack confidence and feel uncomfortable in the college environment that is still predominantly populated by young adults. Instructors can help them by offering positive feedback as often as they can, by avoiding comparing students, and by avoiding putting adult learners "on the spot" by drawing attention to their age or directly calling on them to contribute when they do not volunteer.

Nontraditional age learners, even more than younger students, feel the need for learning to be relevant to their life experiences. They are more likely than younger students to question the importance of a given assignment or body of information (although they may not make their reservations known, since they may lack confidence). They are also more eager to make contributions based on their personal experiences and to use these experiences as the basis for argument in papers and other assignments. Instructors can enlist the support and enthusiasm of older learners, explaining the relevance of assignments and class activities to the course whenever possible. They can also provide opportunities for older students to draw on their experiences and incorporate new learning through the lenses that past experience provides, helping students learn to derive abstract ideas from these experiences in the process.

Personal responsibilities of adult learners are often more complicated than those of traditional age learners. They may have a child in the hospital, a major report due at their office, or a leaking roof to fix at the same time as a term paper is due. Often, they are making large sacrifices to attend college and are spreading their effort over many different life tasks. Instructors can try to understand their situations and exercise whatever flexibility they can in helping nontraditional age learners to be successful.

Especially with much older nontraditional age learners, physical limitations, such as poor vision, hearing loss, or diminished memory, can impair learning. Time limits and reliance on a single mode of teaching, such as lecture, constrain opportunities for these older students. Instructors can vary the stimuli (using visual as well as auditory approaches) and make whatever allowances for time and recall that they judge possible and fair in the situation.

### Students with Disabilities

Students who are physically challenged may be relying on special transportation and may need special considerations in order to attend. Instructors who are flexible about time and make sure that physical arrangements accommodate these students help them participate in higher education.

Students with physical and learning disabilities may require such considerations as extra time to take a test, a reader to read the text or test to them, or special equipment to compose written

work. The Office for Disability Services (see Appendix) provides services for students with a wide array of disabilities, such as mobility, visual or hearing impairments, and learning disabilities. They can advise instructors on what is reasonable to allow and how to refer students to appropriate support services. Often, however, students will be reluctant to ask for special arrangements. Instructors can help by notifying the entire class publicly or stating in the syllabus that any student who has need for test-taking or note-taking accommodation should feel free to discuss the matter with them. A sample syllabus disability statement is included in Chapter 4 in the section "Preparing an Effective Course Syllabus."

Students with learning disabilities sometimes need extra encouragement to sustain their participation, but often do not want to be singled out for special attention. Instructors who try to be sensitive to maintaining a good balance between helping these students and not providing undue attention to the disability will help further their learning.

As with students with different learning styles, it helps students with learning disabilities and some physical disabilities to have information presented in a variety of ways, such as visually, orally, and kinesthetically. If necessary, supplementary sessions outside of class time can be scheduled for this purpose.

## Women Students

Although women have been a part of the college scene for many years now and constitute approximately half of the undergraduate population at Ohio State, classroom practices that have arisen through a tradition of male-dominated instructional settings are often still in use and detract from learning opportunities for women. These practices are described extensively in Hall and Sandler (1982) and include use of sexist language and jokes, failure to recognize women during discussion or to employ eye contact with women, failure to intervene when male students interrupt or deny access to women in discussion situations, holding lower performance expectations for women than men, and routine assignment of dominant roles such as team leader to men rather than women.

The world view, epistemology, and curriculum content of most university instruction has been rooted in the male western tradition. Instructors can enhance learning opportunities for women as well as men by trying to incorporate in their teaching the contributions of women and other cultures and recognizing the value of multiple ways of knowing. They can see knowledge as constructed, rather than transferred, and learn to appreciate alternate ways of knowing, such as emotions, insight, and intuition.

## Students of Different Cultural Backgrounds

Stereotypes about cultural background abound. Assuming that every Asian American student is good at math or that every African American student is an athlete or from an underprivileged background leads to faulty expectations that are communicated to students in subtle ways, often only subconsciously. It is important for instructors to view all students (regardless of cultural backgrounds) as individuals who may or may not have characteristics of the dominant culture before forming expectations.

Many students whose family traditions are rooted in the culture of such places as Africa, Puerto Rico, Mexico, and pre-European America exhibit learning styles that emphasize group cooperation, holistic thinking, a concrete rather than abstract orientation, a valuing of personal knowledge, oral over written tradition, and reliance on imagery and expressiveness to provide an affective component to learning. Instructors who recognize the strengths of these cultural orientations and provide opportunities for students to draw upon them not only further the learning of these students but enrich the learning opportunities for majority students, some of whom may share these styles and others of whom can profit through expanding their stylistic repertoires.

Language, either of another country or a non-standard American dialect, is often a sensitive issue with students from other cultural backgrounds. Students with language differences should be made to feel, first of all, that their language is respected and is not considered *sub*standard. It is important to remember that all language is culturally bound. The rules of a given language are determined by usefulness; therefore, it is problematic to impose standards from one context on a language that is part of another, or to denigrate language systems that are not mainstream. Instructors who focus on task or content (when a course objective can be separated from language itself) help students retain

self-confidence and cultural pride in a different environment. Using visuals, synonyms, and examples when lecturing or in examination questions helps those with different language backgrounds understand what is being communicated. It should also be kept in mind that Academic English is no one's native variety and thus we all must learn it. Instructors may help in this process by suggesting and explaining the technical language used in their fields and in academia in general.

Instructors should take the time to get students' names right, especially those from languages other than English. It is also important to be sensitive to names of groups; for example, "African American" and "people of color" and "students with disabilities" are currently favored, at least in certain geographic locations. "Minorities" is objectionable to many who know that they either already are, or soon will be, in the majority in their state or country. The safest stance is to use currently favored term and to defer to a student's preference if an alternate is offered.

Teaching style expectations are often different across cultural backgrounds. Students from Asian countries may regard asking questions or maintaining prolonged eye contact as improper behavior toward a teacher. Many African American students prefer an informal conversational style with sustained eye contact and use of humor by their teachers. While it is impossible for an instructor to accommodate all teaching style preferences and still be true to a personal style, it is important to work to accommodate different frames of reference.

Students bring to the classroom a knowledge of the achievements of their cultures and the traditions of their heritage. Instructors who incorporate these achievements in their curricula not only build on their students' sense of pride and self-esteem but also enrich the scope of knowledge available to all students in the course. It is important, however, for the instructor to avoid assuming that a student with a given cultural background is able or willing to serve as the representative of that culture when classroom discussions occur. Calling on an African American student to talk about slavery or a Native American to talk about life on an Indian reservation puts the student in a sensitive position, even if the teacher's motivation is student involvement. In other words, one student cannot speak or address the issues and concerns of an entire race or ethnic group.

## How Should Instructors Respond to Student Differences?

To summarize the advice on individual differences, the following guidelines are provided.

- While working in a group setting makes it impossible for instructors to respond to each unique need, they can try to be sensitive to individual differences by providing options for participation, for assignments, for class activities; and by varying the ways in which instruction is provided, trying to supplement lectures with opportunities for discussion, with audiovisual aids, with hands-on or real world experiences when possible.

- Instructors can try to extend the learning styles of all their students as well as respond to them. Students from an oral tradition need to have more writing experiences; students who view knowledge from a dualistic perspective need to be helped to understand that things are more complex; students who rely on concrete experience need to develop greater facility with abstract thinking. It is important, however, that efforts to extend student learning styles and cognitive levels build incrementally on given levels and that instructors not expect major leaps or changes in direction.

- Helping students understand their own styles can lead to better self-awareness of their learning behaviors—the situations in which they learn best, the way in which they respond to particular subject matter, and the like. Knowing about other learning styles can broaden their understanding of others with whom they interact.

- When assigning group projects or tasks, it is often a good idea to mix students of different styles in one group so that students learn to collaborate with others and appreciate differences in style.

- Respecting individual differences, avoiding thinking about students in terms of stereotypes, and keeping channels of communication open are invaluable approaches toward dealing with differences.

- Instructors can be vigilant in avoiding sexist, racist, and homophobic behaviors and humor in their own actions and in correcting these behaviors if they are displayed by students.

## Determining Which Approach Is Appropriate

In order to determine which approach is appropriate for a class, instructors can take the following measures.

1. Talk to others who have previously taught a course about what can be reasonably expected of the students in that course.

2. Use the first class session to obtain information, either on cards or orally, on the backgrounds of the students (major, home town, age, etc.), their prior preparation for the course (previous related coursework, previous degrees or work experiences in the area, etc.), expectations for the course (personal goals and career goals) and the ways they learn best (preferred learning activities or teaching styles).

3. Administer a pretest at the beginning of the course or unit to determine students' entry levels.

4. Watch students' facial expressions and other nonverbal signs of understanding, confusion, or emotional response in class.

5. Encourage students to speak with them outside class or routinely arrive early and talk with students before class. Instructors can make a point of speaking with a wide range of students and not only the high achievers.

6. Provide for early feedback through a test or paper that will count only marginally, if at all, toward the final grade.

7. Administer a learning style inventory to assess differences in the students or ask students to provide a self-report on the ways in which they learn best. Perhaps the two most popular such assessments are Kolb's 1994 Learning Style Inventory and Grasha's 1997 Psychological Type Index. Both are available through Faculty and TA Development.

8. Provide frequent opportunities for students to comment on the instruction. One way is the "minute paper," an exercise that involves asking students to take the last five minutes of class to comment on one main concept that they learned and questions they would like addressed in the next class, or on their assessment of how well the course is going and their suggestions for change.

9. Obtain student evaluations of instruction at midterm and at the end of the term to provide direction for the remainder of the term or for the next time the course is taught.

10. Make use of print resources, workshops, roundtables, and seminars that are available through the Faculty and TA Development.

In summary, effective instruction entails paying attention to the "people" dimensions of the learning situation. Instructors who make some effort to get to know their students' backgrounds and learning styles and to establish a good relationship with them will find that the efforts are well rewarded in the quality of learning that results. Chapter 4 begins with a discussion of Universal Design, an approach to course construction which ensures accessibility for all students.

## Recommended Readings on How Students Learn

Items preceded with an asterisk (*) can be found in the FTAD resource suite.

*Adams, M., Bell, L., & Griffin, P. (Eds.). (1997). *Teaching for diversity and social justice.* New York: Routledge.

Baxter-Magolda, M. (1992). *Knowing and reasoning in college: Gender-related patterns in students' intellectual development.* San Francisco: Jossey-Bass.

*Grasha, T. (1990). The naturalistic approach to learning styles. *College Teaching, 38,* 106–113.

*Perry, W. (1970). *Forms of intellectual and ethical development in the college years.* New York: Holt, Rinehart and Winston.

# 3: Effective Teaching

One of the most important goals of The Ohio State University is to offer effective instruction to the students who study here. The university strives to recruit the best faculty and teaching associates possible and to support them in their teaching, research, and service endeavors. As part of the support for teaching, this handbook provides an overview of some basic information on instructional strategies. To situate this information within the general context of effective teaching, this chapter discusses what is meant by effective teaching, how teachers can continue to develop their instructional strengths through seeking and using feedback, and how, given the pressures on instructors to perform well in several roles, they can "balance it all."

## Traits of Effective Teachers

Although many people believe that good teaching is impossible to define in any general way, a large body of research suggests that certain characteristics are consistently associated with good college teaching as viewed by students, other teachers, and administrators. In a study of winners of the Alumni Distinguished Teaching Award at Ohio State (Ebro, 1977), observation of classes identified the following characteristics of effective teaching, which strongly parallel those found in other studies:

- The teachers got right down to business. They began class promptly and were well organized.
- They taught at an appropriately fast pace, but stopped regularly to check student comprehension and engagement.
- They used a variety of instructional strategies rather than lecture alone.
- They focused on the topic and their instructional objectives and did not get sidetracked. Their explanations were clear.
- They used humor that was in keeping with their individual styles.
- They practiced good classroom management techniques, holding the attention and respect of the group.
- They interacted with students by providing immediate answers to questions or comments and corrective feedback when needed. They praised student answers and used probing questions to extend the answers.
- They provided a warm classroom climate by allowing students to speak freely and by including personal humor or other attempts to relate to students as people.
- They used nonverbal behavior, such as gestures, walking around, and eye contact, to reinforce their comments.

Joseph Lowman (1996) describes two main dimensions of effective college teaching that emerge in his studies: intellectual excitement (enthusiasm, knowledge, inspiration, humor, interesting viewpoint, clarity, organization) and interpersonal concern/effective motivation (concern, caring, availability, friendliness, accessibility, helpfulness, encouragement, challenge). Other studies (see, for example, Chickering and Gamson, 1991) consistently identify knowledge of subject matter, organizational skills, enthusiasm, clarity, and interpersonal skills as marks of the effective teacher. The amount of agreement across studies suggests that the characteristics of good teaching are not mysterious or extremely discipline-specific. They can, and have been, identified by researchers, students, and professionals alike.

Inspection of these characteristics fails to support another commonly held belief about teaching: "Good teachers are born, not made." While certain characteristics, such as humor and interpersonal skills, seem to come easily to some people and not others, people are not born with knowledge of a given discipline or competency in the use of instructional strategies. Furthermore, those who exhibit these qualities most consistently state that they work hard at attaining them and are very conscious of their actions and their effects.

These highly conscious teachers are examples of what Donald Schön (1983) has termed the

"reflective practitioner," the professional who acquires expertise by learning in the action environment. In a study of Ohio State faculty (Chism, 1988), a model of faculty growth in teaching emerged that suggested that effective teachers develop by maximizing what they learn through experience. They engage in cycles of learning during which they try a practice, observe its effects, and decide how and when they will use a similar practice. The process is often carried on without a great deal of conscious attention and rather unsystematically by most teachers. What distinguishes those who learn best, however, is the very level of conscious reflection and the quality of information they bring to bear in determining the effects of a practice in a particular context. The best teachers know not only what they are doing, but why it is working and why it is likely to work in one kind of environment and not in another. Although they may have some natural personality characteristics that support their success, they also work very hard at their teaching and continually try to improve.

## Teaching Styles

A number of writers have observed differences in style among teachers. They classify them according to a number of dimensions that represent how the teachers approach their students, the ways in which they think learning takes place, and personal strengths and preferences. Lowman (1996), for example, observes that exemplary college teachers "appear to be those who are highly proficient in either one of two fundamental sets of skills: the ability to offer presentations in clearly organized and interesting ways [intellectual excitement] or to relate to students in ways that communicate positive regard and motivate them to work hard to meet academic challenges [interpersonal rapport]. All are probably at least completely competent in both sets of skills but outstanding in one or, occasionally, even both of them" (p. 38).

Grasha (1996) delineates five teaching styles:

*Expert*—is concerned with transmitting information from an expert status; challenges students to enhance their competence

*Formal Authority*—is concerned with the acceptable ways to do things and providing students with the structure they need to learn

*Personal Model*—believes in teaching by personal example; oversees and guides students to emulate

*Facilitator*—emphasizes the personal nature of teacher-student interactions; guides students toward developing their capacity for independent action

*Delegator*—is concerned with developing students' capacity to function autonomously; encourages independent projects

Grasha advocates an "integrated model" of teaching and learning styles, recognizing that individual teachers will naturally exhibit different styles, but stressing that teachers must cultivate certain styles so that they can use approaches that are appropriate to the instructional situations and kind of learners they encounter. For example, he observes that a blend of the Expert-Formal Authority styles works best with learners who are dependent and less capable with the content. Grasha advocates that teachers reflect on their stylistic approaches and make conscious decisions about these. His book, *Teaching with Style*, provides many exercises for faculty to use in thinking about styles of teaching.

### Starting Well and Developing Teaching Skills

After studying new faculty at different institutions over several years, Robert Boice (1991, 1992) identified several characteristics of new faculty members he calls "quick starters," those who adjust easily and make steady progress in their work. According to Boice, quick starters:

- are concerned about students' active involvement in the learning process
- avoid feelings of isolation by developing social and professional networks with colleagues and others
- seek advice on teaching from colleagues and consultants
- avoid being critical and negative about under graduate students
- learn to balance time across teaching, research, and service
- are highly energetic, curious, and humorous

Eison (1990) stresses the importance of confidence for new teachers. Confidence is built upon good planning, clear goals, and a cultivation of relaxation and self-esteem. Eison advises new teachers

to avoid perfectionism, to recognize their limitations, and to view admitting that they do not have all the answers as scholarly, rather than a sign of failure.

Sustaining growth in teaching involves continuing to learn. Chism (1993), using a model of teaching development rooted in experiential learning, suggests that experienced teachers can avoid burnout and continue to improve through:

- stimulating their own thinking by taking advantage of opportunities to learn new approaches to teaching through reading, attending workshops and conferences, observing colleagues, and joining book groups or seminars on teaching topics
- relying on colleagues and teaching consultants to try new things and to provide them with support as they experiment with teaching
- obtaining regular, systematic feedback on their teaching
- reflecting on their teaching continually and making changes based on those reflections

Stephen Brookfield, in *Becoming a Critically Reflective Teacher* (1995), offers a variety of practical and insightful methods for promoting reflection on one's teaching. He stresses understanding how students learn as a way to approach teaching improvement.

Chapter 9 will highlight additional opportunities for growth and development. Strategies for documenting teaching performance will also be discussed.

# The Role and Types of Feedback

A key element in the process of teacher development is feedback. As with all learning, getting information on one's actions is essential to continuing improvement. Most teachers get feedback on their teaching by scanning faces in class for signs of interest or confusion. While these are important strategies, they are highly inferential. The most effective teachers employ more systematic ways of obtaining feedback. Several ways are described below.

## Written Evaluations from Students

There are a variety of ways in which instructors can obtain written information on their teaching from students. They may use one of several standard teaching evaluation forms with rating items that have been tested for their validity and reliability. Since the items on these forms are often very global and students frequently are asked to provide a rating without an explanation, standard forms serve mainly as gross performance indicators. They can alert instructors to areas that differ from average ratings.

### The Student Evaluation of Instruction (SEI)

One student rating form that is available at Ohio State is the Student Evaluation of Instruction (SEI). A 10-item form, the SEI is designed primarily to monitor teaching performance for personnel decision-making processes. The items tap into global ratings of instruction, such as "The subject matter of this course was well organized," "The course was intellectually stimulating," and "The instructor was generally interested in teaching." Forms are sent automatically to all instructors, who may use them and return them to the University Registrar for tabulation, using a process designed to preserve confidentiality and validity. Instructors then receive reports that display their scores, their college's or school's mean scores, and university mean scores for all items, along with interpretive graphs.

### Feedback on Your Instruction (FYI)

A second optional method for collecting student feedback is the FYI. This is a web-based tool that instructors can use anytime to generate customized questionnaires containing items that solicit student opinion about particular things that the instructor wishes to check. It can be used for early or final feedback, depending on the instructor's preferences. It should not be used for documenting teaching effectiveness since it is intended specifically for teaching and course improvement.

To access FYI, the instructor visits the FYI web page (http://www.ureg.ohio-state.edu/fyi), logs in, and then selects questions to be included in the survey. Over 200 questions are arranged within 16 categories. Both standard and custom items are available. The instructor can choose as many or as few as desired. When selection is complete, the

questions are printed on a form according to the format the instructor has chosen. The instructor then photocopies the instrument, administers it, and scores it. There is no need for a third party to tally the results since they are intended for the instructor's own use. For large classes, instructors can use scan sheets and submit these to the Office of Testing for more efficient tabulation of scaled items.

Consultants from Faculty and TA Development (292-3644; see Appendix) are available to help instructors customize their questionnaire, interpret the results of student feedback on teaching, and think of strategies for changing teaching in response to suggestions.

### Other Instruments

More specific feedback from students can be obtained on comment and "tailored" forms developed by the instructor or by a Faculty and TA Development consultant for use at any time during the course. Many instructors use such forms at midquarter, judging that students are able to assess the teaching by then and that there is still time to make changes if the information points to problems. Written comments can be obtained frequently during the quarter through an informal activity called the "minute paper," in which students are asked during the last minutes of class to comment on a blank sheet of paper about that class period or the course in general, suggesting whatever changes they feel would improve the course. Instructors who are using a new teaching technique or experimenting with the content or structure of a course might ask students to comment on the particular change that is occurring as it happens. Written comments gathered in these ways provide specific kinds of information that instructors can use as they assess the effects of their practices in an effort to improve and to increase their instructional repertoire.

## Class Committees

Some instructors at the beginning of the term appoint a committee composed of students from the class charged with gathering and providing feedback on the course and teaching performance from the student perspective. The committee may devise its own survey form, collect information informally through conversations with members of the class, or hold periodic "meetings" to discuss class issues. The committee meets at intervals with the instructor to discuss the information it has obtained.

## Discussion Mapping

Instructors often wonder why some class discussions are more productive than others or how they can better keep discussions on track. The discussion mapping technique can help answer these and other questions regarding class discussions. This technique leaves the instructor free to continue his or her role as facilitator while a colleague or teaching consultant observes various aspects of the discussion, including (a) how participation is distributed (Are there patterns associated with age, gender, or cultural differences?); (b) the nature of teacher comments (Are they supportive, argumentative, topical, or discursive?); (c) the listening skills of students; (d) how content is addressed (e.g., Do students concentrate on theoretical or practical implications? When appropriate do they engage in synthesis, analysis, and evaluation techniques?); and (e) the role of the facilitator (e.g., Does the facilitator mainly guide the discussion, monitor participation, or handle problems that arise?). Discussion mapping services are available through the Office of Faculty and TA Development.

## In-Class Observation

Inviting a colleague or teaching consultant from Faculty and TA Development to observe class is yet another way in which instructors can receive helpful feedback on teaching. It is useful to try to identify in advance of the observation some specific things that the observer should be noting. For example, an instructor concerned about whether he or she creates enough opportunities for participation might ask the observer to pay close attention to this question as the class is observed. Depending on the particular focus of the observation, observers may use a pre-established rating or frequency count form for recording information or they may use a narrative format. The more skilled the observer, the better the feedback the instructor is likely to receive. Observation is also improved if multiple observations are used to establish a representative information base and if multiple observers are used to corroborate findings. Following an observation, it is important for the instructor and observer to meet to exchange information and to discuss specific ways for improving the instruction that was observed. Specific ideas for classroom observation are in *Peer Review of Teaching: A Sourcebook* (Chism, 1999).

## Videotaping

Videotapes, recorded either in the actual class setting or in a simulated environment, are a very powerful means of feedback for assessing presentational skills. The videotape can be analyzed by the instructor with or without assistance from a consultant or colleague to explore a variety of teaching skills ranging from nonverbal behavior, voice tone, and diction to clarity of presentation, classroom management, and organizational quality. Often, viewing oneself provides an immediate message that creates a strong awareness of one's strengths and weaknesses as a teacher. Videotaping only services are available through Classroom Services (see Appendix). Videotaping and analysis are available through Faculty and TA Development. These services are free of charge.

## Class Interviews

Usually conducted by a person other than the instructor, class interviews can serve as another good source of feedback for the improvement of teaching. According to a procedure described as a Small Group Instructional Diagnosis (SGID) by Joseph Clark, a former instructional developer at the University of Washington, the interview is conducted by a teaching consultant who works with students in groups to answer three questions: *What do you like best about this course? What do you like least?* and *What suggestions do you have for the instructor?* The consultant tries to probe when there are areas of uncertainty or disagreement and tries to get the class to arrive at a consensus on each topic which is brought up. Following the class, the consultant reports back to the instructor and the two discuss relative teaching strengths identified and implications for change. Other ways of conducting class interviews are also available to instructors who might want to identify some specific areas of concern or might want a student or colleague to conduct the interview. Instructors may also want to interview specific students themselves to get feedback. Consultants at Faculty and TA Development are available to conduct class interviews at the request of the instructor.

## Syllabus and Materials Review

When instructors would like information and opinions about the goals of the course, the way in which it is structured, the appropriateness of the activities and examinations, and the accuracy and quality of the printed materials that are distributed, they can ask colleagues who have knowledge of the discipline to review course documents. While students or a teaching consultant may offer some feedback on examination items or the clarity of explanations in printed notes, often the best judge of content accuracy will be the colleague who has disciplinary expertise. A review of materials is followed by a conversation during which the reviewer provides feedback to the instructor. Specific ideas for reviewing syllabi or course materials are in Chism (1999).

### Students' Exams, Written Work, and Other Products

Although instructors generally keep a careful record of grades, very few devote a lot of attention to looking at teaching factors associated with the results. In order to learn more about the effects of specific teaching practices, instructors can do such things as examine a set of graded papers for common error patterns (see the section "Procedures for Computing Difficulty and Discrimination Indexes" in Chapter 7), talk with students about how prepared they felt for a given examination (individually or in the form of a "minute paper," see Chapter 2 under "Ways to Determine What Approach is Appropriate"), or look to see if certain key concepts or skills they tried to convey are reflected in the students' tests, papers, or other work. Chapter 7 is devoted entirely to the process of assessment.

# Classroom Research

Instructors with particular questions related to student learning or teaching strategies can use the classroom as a natural laboratory for descriptive or experimental studies. Often, these may be very informal, such as to assign one paper with a given format and to assign another with a different format to see which format is associated with better achievement of objectives. Studies may involve such things as having students take learning style inventories so that the instructor knows more about the range of learning preferences in the class. The studies must be conducted in a way which does not jeopardize student learning, but which can provide solid information for making good teaching choices. Classroom research is a more systematic way of conducting the ongoing inquiry into teaching practice that is so essential to teacher growth. For a more in-depth look at the subject, see *Classroom Research: Implementing the Scholarship of Teaching* by Cross and Steadman (1996).

Angelo and Cross (1993) have compiled a variety of strategies called *classroom assessment techniques* (CATs) for obtaining information on student learning and teacher performance. Their collection of 50 strategies is a useful resource for instructors who wish to conduct brief, informative classroom inquiries. Example techniques include the "Muddiest Point," whereby the instructor asks students to take a minute at the end of class to identify one thing that they are still puzzled about, and "Reading Rating Sheets," which ask students how well they understood an assigned reading, how helpful it was, and what specific questions they have about the reading.

## Balancing It All

The challenging task of being the kind of teacher who continually strives to improve instructional technique is faced by instructors who are simultaneously conducting their own studies or research program as well as engaging in service activities and maintaining a personal life. Often, instructors feel caught among all these roles and have the sense that they are not performing up to their personal standards. Severe stress can result. Experts in the field suggest several ways in which stress can be controlled. Psychology professor Anthony Grasha (1987) lists the following solutions:

1. *Be more assertive about refusing requests.* He suggests that instructors avoid feeling that they must please others at personal expense to themselves. He notes that it is not necessary to provide a reason for refusing requests.

2. *Set priorities*. Grasha advises that instructors look at their calendars before each week begins with the following questions in mind: (a) Does the task have to be completed as scheduled?, (b) Is the task something that can be delegated to others?, (c) Can completion of the task be delayed for a period of time?, and (d) Is it really necessary to do this task at all? After using the questions to eliminate some tasks, the instructor should schedule social and recreational time as well as uninterrupted "work" time for writing or extended projects and take these "appointments" as seriously as scheduled meetings.

3. *Use quick relaxation techniques.* Grasha suggests that tensing the body for a count of 10 and then breathing deeply in and out to a count of four for a period of three to five minutes is especially effective after a tension-producing event. He also suggests that writing, such as keeping a personal journal or writing angry letters that are not mailed, can help during extremely stressful periods.

4. *Think Positively.* Citing William James, Grasha points out that stress often occurs when people feel that they cannot perform to self-expectations. He advises that people reevaluate their expectations, seek small victories, focus on achievements rather than deficiencies, and seek social support.

## Summary

Teaching is, as a recent report (Higher Education Research Program, 1989) terms it, "the business of the business," the main purpose for institutions of higher education. Instructors who take this responsibility seriously strive continually to be more reflective about their practice and to improve as their careers progress. Good teaching involves more than the simple transmission of information and includes motivating students and creating a positive classroom environment as well. When coupled with the many other responsibilities a university instructor has, however, efforts to teach well can lead to stress and burnout. Maintaining realistic expectations and exercising time management are ways in which instructors can help avoid unproductive stress.

## Recommended Readings on Effective Teaching

Items preceded with an asterisk (*) can be found in the FTAD resource suite.

*Angelo, T., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers*. San Francisco: Jossey-Bass.

*Brookfield, S. D. (1995). *Becoming a critically reflective teacher.* San Francisco: Jossey-Bass.

*Eble, K. (1988). *The craft of teaching* (2nd ed.). San Francisco: Jossey-Bass.

*Grasha, A. (1996). *Teaching with style: A practical guide to enhancing learning by understanding teaching and learning styles.* Pittsburgh: Alliance.

# 4: Course Preparation

At the heart of a successful course is the planning that precedes it. Good planning involves several steps:

1. Identify the content domain of the course.
2. Decide upon the goals that students are to reach at the end of the course.
3. Select subject matter, materials, learning activities, and teaching methods that are appropriate and relevant to those goals and objectives.
4. Determine how to engage students in the subject matter.
5. Design methods to measure and evaluate students' performance according to the objectives and goals that were originally selected.

Finally, the first day of class sets the tone for the rest of the course. These topics on the subject of course planning are all addressed in this chapter.

## Universal Design for Course Construction

The way in which students access, process, and demonstrate information in a course can vary widely, based on their learning style, cognitive development, personality, cultural background, and abilities.

Universal Design is an approach to designing course instruction, materials, and content to benefit people of all learning styles without adaptation or retrofitting. Universal Design provides equal access to learning, not simply equal access to information. Universal Design allows the student to control the method of accessing information while the teacher monitors the learning process and initiates any beneficial methods.

Although this design enables the student to be self-sufficient, the teacher is responsible for imparting knowledge and facilitating the learning process. It should be noted that Universal Design does *not* remove academic challenges; it removes barriers to access. Simply stated, Universal Design is just good teaching.

### Principles

- Use a variety of instructional methods when presenting material (see Chapters 3 and 5 for discussions of such methods).
- Allow for multiple methods of demonstrating understanding of essential course content (see Chapter 7 on Assessment).
- Use technology to enhance learning opportunities and increase accessibility.
- Integrate natural supports for learning (i.e., using resources already found in the environment, such as fellow students for study partners).
- Invite students to contact the instructor with any questions or concerns.

## Course Content

The scope of a course is a curriculum decision and as such, is broadly identified through a process of dialogue that involves not only the instructor, but the department, college, and university at large. Although the University's course approval process is the originating point for content decisions, instructors have latitude within the bounds of the final approved course description in deciding the specific content that will be part of a particular course offering. If the course is part of a sequence that builds on skills and knowledge from a previous course or is standardized across the department, the course will have to include the expected content.

## The Importance of Course Goals

Among the most important course decisions is the identification of course goals. Without clear course goals, the following results are likely:

- The instructor will have difficulty selecting appropriate subject matter, materials, and teaching methods.

- The instructor will have difficulty staying on topic throughout the course and selecting appropriate topics to be tested.

- Students will complain that the course is irrelevant, that the material is not related to their personal educational goals or to any other goals they can recognize as being important.

- Students will complain that the tests are unfair; one topic is assigned, another is taught, and a third is covered on the tests.

- Students will complain that they do not know what to study since no priorities among topics are provided.

- Students will complain that the course is disorganized, that the topics do not fit together, and that there is no clear direction.

On the other hand, clear goals enhance the possibility that the following results will occur:

- Teaching will be more focused and precise. Instructors will have subjected the course to a thorough analysis and will have selected *on purpose* what they expect the students to learn in the course.

- It will be easy to identify points where learning needs to be monitored or tested.

- It will be possible to confirm that student needs are being met.

- Instructors will be aware of different teaching and learning styles. One can specify the product (which may reduce test and grade anxiety) and make an intelligent choice of the appropriate teaching and learning process.

- Students will always have a clear statement of the purpose and aims of the course to turn to when they are studying or unsure of the course's aims. They will find it easier to progress through the course in an organized manner.

In short, with well-defined course goals there is a clear communication of intent on the part of the teacher regarding what he or she is trying to teach, what the students are going to be expected to be able to do, how their achievement will be measured, and what will be accepted as evidence that they have achieved the goals.

## Instructional Objectives

Over the years, educators have approached goal setting in a variety of ways. During the decades when learning theory was characterized by a Behaviorist approach, educators urged teachers to set broad goals and then develop very precise instructional objectives for each goal. According to Robert Mager (1962), an instructional objective is "an intent communicated by a statement describing a proposed change in a learner—a statement of what the learner is to be like when he has successfully completed a learning experience." Teachers were encouraged to state objectives very narrowly and to include measures specifying how attainment of the objective would be judged; for example, "The student will be able to draw the structures of these chemical compounds to 100% accuracy when compared with the textbook figures."

As learning theory focused on more holistic ways of thinking about learning, educators began to think differently about objectives. Eisner (1994), for example, stressed that during inquiry or discovery learning, one wants to be open-ended about what might result. He substituted the term "instructional objectives" with the term "expressive outcomes." Today, most educators agree that good instructional objectives should neither be so narrowly stated that they represent the intended curriculum mechanistically nor so generally stated that they lend little clarity to the intended goals. They should not discourage creativity on the part of either teacher or learner, nor should they take away the need for the teacher to communicate the "challenge" of studying and learning to her or his students. Other dangers to be aware of are objectives that insult students' intelligence, that are restricted to lower-level cognitive skills, that seem mechanistic or dehumanizing, or that result in overconcentration on the aspects of a subject while the students miss the "big picture."

Loosely stated objectives—such as "The students in Theatre 100 will understand what makes good theatre"—are not especially useful. It is generally better to refer to a specific realization or ability that the teacher wants his or her students to gain as a result of their course. An example of a well-stated objective might be the following: "The students in

Physics 101 will demonstrate awareness of the importance of safety in the laboratory by learning and completing six standard precautionary steps before beginning each of the experiments in the course."

Many educators evaluate their instructional objectives using the work of Benjamin Bloom. Bloom (1956) classified various abilities and behaviors that correlate with cognitive learning objectives into a taxonomy (now commonly referred to as Bloom's Taxonomy of Learning) that represents the thinking processes required of students as a continuum moving from the simple to the complex. This hierarchy can serve as a classification scheme for constructing course objectives since it focuses on the way a student acquires and uses knowledge in any subject area. It includes the following levels, starting from the bottom:

*Knowledge*. The lowest level. Primarily concerns the students' ability to memorize or recall certain specific facts. A sample knowledge objective is: "Students can define 'osmosis.'"

*Comprehension*. Involves the ability to interpret, paraphrase, and extrapolate, thus demonstrating the students' basic understanding of ideas that they did not originate. A samplecomprehension objective is: "Students can give examples of loosely coupled systems."

*Application*. Includes activities in which the student applies concepts and principles to new and/or practical situations. A sample application objective is: "Students can use the formula to predict economic effects."

*Analysis*. Concerns breaking down a piece of information into its constituent parts, differentiating and discriminating. A sample analysis objective is: "Students can diagram musical variations in a given composition."

*Synthesis*. Involves the blending of elements and parts in order to form a whole. Students should be able to create a structural pattern that was not previously present. A sample syntheses objective is: "Students can summarize the research literature on genetic engineering."

*Evaluation*. The highest level. Students might judge the value of a work, the logical consistency of written data, or the adequacy of someone else's conclusions. A sample evaluation objective is: "Students can judge the adequacy of research claims according to the supporting data."

If the above are used when formulating objectives, it should be possible to analyze which of the course objectives require higher-order student behavior (application, analysis, synthesis, and evaluation) and which center around lower-order objectives (knowledge and comprehension). Most instructional specialists argue that effective objectives (and well-designed courses) will almost always include some higher order objectives and not center exclusively around retention and understanding. Likewise, in most curricula there are foundational knowledge and comprehension requirements that must be achieved before higher-order objectives can be addressed.

## Structuring an Effective Course

In *Teaching Assistance: A Handbook of Teaching Ideas* (1982), John Andrews suggests that a teacher should use the following questions as a means of planning an effective course. These points should enable the instructor to see how goals can shape planning for other aspects of the class. Note that the questions focus at the end point first and then work backward in time to the first action the teacher will take:

1. How does the teacher want students to be changed as a result of this class? What should they be able to do that they cannot do now?

2. How are these changes to be measured? What sort of performances (exams, papers, etc.) will be used?

3. What subject matter will be covered to help students meet the expectations in (1) and (2)?

4. What about the "how" of teaching? What sorts of formats or activities will be used to help students practice the abilities needed to meet (1) and (2)?

5. How are expectations communicated to the students? What is their picture of the objectives they will need to meet?

Mary Minter of the University of Michigan (1986) has suggested a more detailed planning analysis for an instructor faced with a new course

if such an expectation exists. She suggests that on accepting the course assignment, well-prepared instructors first set out to acquire as much information as possible about the students they will be teaching (see the first section of this handbook) and the content they will be expected to cover in the course, if such an expectation exists. Resources to consult include the college catalog, previous syllabi, the official department course description, and the assigned textbook. Instructors can also solicit help from anyone who has previously taught the course.

Minter regards the next step as the setting of general goals and specific instructional objectives for the course. Instructors might be able to use a general purpose statement given on a previous syllabus, and/or they might want to include different or additional goals. The next step is to provide the student with even more specific instructional objectives, which should relate to the overall goals and be specific to the major content sections/topics. "Action verbs" that are specific, such as: "list, write, report, do" are highly recommended. The final step is to conduct another level of task analysis. Students' basic learning needs in the subject area should be identified. (This can be based, for example, on past experience with similar groups of students or on a personal questionnaire that students complete on the first day.) From all this analysis an effective course structure will evolve.

Grunert (1997) stresses the importance of a "learning-centered" approach to course planning. She suggests that students should be involved in course planning through clarifying their own goals for the course, helping choose learning activities, monitoring and assessing their progress, and assisting in establishing the criteria on which performance will be judged. Some instructors use portions of the first class to modify or build upon their own plans for the course by asking for student participation and suggestions.

## Selecting Learning Activities

Much of this section has assumed the use of traditional classroom formats such as the lecture/discussion mix or lectures coupled with laboratory demonstrations. There are, nonetheless, a variety of other possible methods for the delivery of instruction. These are discussed in the following chapters on modes of teaching and assessment. In selecting and planning classroom instructional strategies to match course goals and objectives, it is important to consider the following:

- Will the strategy accomplish the objective? It is unlikely, for example, that straight lecturing in a course designed to increase problem-solving skills would be an appropriate strategy for all class sessions. Group work would be a poor choice if rapid transfer of information is the goal.

- Will the strategy be accessible to all students? If only hands-on work is used, those who learn best by listening, reading, or writing will be at a disadvantage. It is best to establish a rhythm of strategies, varying the approach and introducing redundancy so that all can learn.

- Will the strategy be feasible, given the context? Is the classroom structured to preclude certain activities? Is the class too large or too small for certain activities? Are the class periods long enough to accommodate the use of certain activities?

- Will students need preparation to respond to the strategy? Since students are so used to being passive in class, instructors cannot automatically assume that their students will be able or want to respond to group work, independent work, or other activities. It is often important to build in some time for helping students get the most from a given instructional approach before it is used.

- Is the instructor comfortable with the approach? Often, even when a given approach seems most appropriate, an instructor will not be at ease with it. Although instructors should continually try to expand their repertoire, it is important to choose strategies that are within one's personal range.

Teachers choosing to use these important alternative methods need to be clear about specifying the learning task and breaking it up into manageable units if it is complex. Students will need monitoring through the exercise, and an external resource person who can offer students help should always be available. It is a good idea to test new material on a sample group so that it can be revised before it reaches the intended audience. Finally, it is vital to ensure that easy access is available to all the materials and that sufficient opportunities for student feedback are built into the course design.

The key, of course, is to begin with good goals and objectives. Helping students more easily attain the goals set for the course should be the main criteria for selecting instructional approaches.

## Culturally Inclusive Content

Shulman and Hutchings (1994) advise instructors to think about underlying assumptions throughout the process of planning a course. For example, they suggest that instructors should think about whether their content is inclusive (of varying approaches and viewpoints) or concentrates on only a very narrow perspective, whether their approach takes new developments in the field into consideration, and how their course will complement other courses in the department.

In their approach to curriculum reform, Banks and Banks (1995) suggest that instructors be inclusive in their choice of content. They distinguish among increasingly more complex levels of infusing diversity into the curriculum:

*Level 1: The Contributions Approach*
Heroes, heroines, holidays, foods, and discrete cultural elements are celebrated occasionally. For example, African American historical figures are only celebrated in February during Black History Month.

*Level 2: The Additive Approach*
Course content, concepts, lessons, and units are added to the curriculum without changing the structure of the course. For example, instructors might add the book *The Color Purple* by Alice Walker to a unit without changing its structure.

*Level 3: The Transformation Approach*
The structure of the curriculum is changed to enable students to view concepts, issues, and themes from multiple perspectives. For example, a lecture on World War II might address the meaning of the war to African Americans, or a lecture on standard medical practices might be examined in light of eastern or Native American theories of healing.

*Level 4: The Action Approach*
Students make decisions on important personal, social, and civic problems and take actions to help solve them. For example, a class might study the effects of institutional discrimination practices in higher education and develop an action plan to improve these practices at their institution.

In addition, instructors are expected to make content decisions with a sense of balance, striving to broaden student perspectives and prepare them for subsequent learning experiences. Banks (1997), Adams et al. (1991), and Friedman et al. (1996), just to name a few, have suggested and recommended strategies to integrate content from an interdisciplinary perspective. These and other resources are available through Faculty and TA Development.

# Team Teaching and Interdisciplinary Course Planning

As problems become more complex and require multidisciplinary perspectives, collaborations among instructors within and across departments is leading to more cases of interdisciplinary and team teaching. In the special cases of team teaching and interdisciplinary courses, the course planning process follows a similar pattern, but there are added considerations. James Davis (1995) deals with these at length in *Interdisciplinary Courses and Team Teaching,* arguing for the advantages of such arrangements, both for their holistic approach and for their developmental potential and intellectual excitement for both instructors and students. In the case of interdisciplinary courses, he points out, a prior step to the others involved in the usual planning process is what he terms, "Inventing the Subject," a period of dialogue and exploration during which the instructors and others decide on the principal issues and perspectives that the course will encompass.

Most interdisciplinary courses involve team teaching, but team teaching can also be the strategy of choice in single discipline courses. The strengths of team teaching rest on the belief that multiple perspectives, energy, and talents can enrich a course tremendously. Davis lists eight characteristics of effective teams found in the literature: clear, elevating goal; results-driven structure; competent members; unified commitment; collaborative climate; standards of excellence; external support and recognition; and principled leadership. To plan together well takes more coordination, and Davis and others emphasize that clear communication among team members is the key to success. Delegation of responsibilities and frequent checks of results of tasks are important during the planning process.

Although a high level of dialogue is involved, Davis recommends that teams truly work together and avoid the "tag team" syndrome of assigning each a topic or topics and taking charge of the course in serial fashion.

# The Syllabus

## The Importance of the Syllabus

Following course planning, a syllabus becomes the next vehicle for communicating the structure of the course and operating procedures. It will help students know what is expected from the start of the course and will allow them to plan their quarter efficiently. The opportunity for capricious grading charges will be diminished and a positive image will be presented to the students (a well-prepared syllabus is evidence that the instructor takes teaching seriously). A syllabus also provides the departmental office, supervisor, and/or colleagues with pertinent information about the course. Most university departments require some type of syllabus.

A large number of academic misconduct cases and student complaints have at their root a lack of understanding of the requirements and expectations for performance in a course. A syllabus can consolidate into a single document all of the routine matters that surround teaching a course—reading schedules, grading, due dates, class topics, etc.—that would otherwise have to be communicated in individual conversations with each member of the class.

Simply put, the syllabus is a formal statement of what the course is about, what students will be asked to do, and how their performance will be evaluated. Unlike the comments an instructor makes in class, it is a lasting statement to which students can refer again and again. Careful construction of the syllabus reduces ambiguity and is the first step toward producing an environment in which student learning can flourish.

## Preparing an Effective Course Syllabus

One can begin by studying syllabi from other instructors or those that have been used previously in the course being taught. Instructors might also check with their departments for specific guidelines they may have about a syllabus format. The following are generally included in the syllabus:

1. *Relevant information about the course and instructor*. The information should include the current year and quarter, the name and number of the course and the meeting time (with days of the week), and location. It should also include the instructor's name, phone number, the location of the instructor's office, and the times of his or her office hours. The same information should be included for any teaching associates or course assistants. These facts are normally placed at the beginning of the document.

2. *A clear statement of course goals*. The course goals should be as clear as possible and should describe what the students will be expected to know at the end of the quarter, rather than what the instructor plans to do.

3. *A description of the means (or activities) for approaching the course goals*. Possible items include field trips, guest lecturers, discussions with active participation, problem-solving groups, assignments, use of audiovisual materials, etc. The amount of student time required for each activity may be estimated.

4. *A list of the resources to be obtained by the students*. Most important here are the required text(s), course packs, and reading assignments. Their prices and where they are available for purchase or loan should be included. (It is important to check that the bookstore or library will have the text on the shelves before students are sent to find it!) It might also be explained if materials other than text(s) are required of students. Any supplemental materials such as lecture tapes, sample projects, or past tests that are available can be mentioned.

5. *A statement of grading criteria*. This will explain the grading criteria, the components of the final grade, the weighting of various grades, the relationship of class participation and attendance to the final grade, and other relevant information. The number of tests each quarter might be included, along with a description of each test. The numerical equivalent of letter grades can be provided, or the "ranges" of each grade. A fuller explanation of the concept of grading can be found in Chapter 7 on Assessment in this handbook.

6. *A statement of course policies*. This is best expressed in a clear, nonthreatening form. Policies should be set for events such as missing an exam, turning in a late assignment, missing class, requesting an extension, and reporting illness. It is a good idea to go on record with a fairly stringent policy that can be informally tempered at a later date, if and where circumstances so warrant. Absolutes are always more trouble than they are worth. There can also be a short statement defining academic misconduct in one's individual subject. Instructors should indicate that they will follow University Rule 3335-31-02, which requires that "Each instructor shall report to the committee on academic misconduct all instances of what he or she believes may be academic misconduct."

7. *Disability statement*. An important part of the syllabus is a statement that informs students with disabilities that materials are available in alternate form and that accommodations will be made. The Office for Disability Services proposes the following as a good example statement:

   "Any student who feels he/she may need an accommodation based on the impact of a disability should contact the instructor privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities."

8. *A schedule*. If each class hour is mapped out in detail, this will doubtless be the longest and most time-consuming segment of the syllabus to prepare, although it will be a good investment in a well-organized class. The syllabus should, as a minimum, contain dates with the corresponding sequence of class or lab topics, the preparations that are required or suggested, and the assignment that will be due. The instructor should note holidays and the date and time of any midterms, as well as the final examination. It is up to the instructor to weigh student need for structure and expectations against instructor need for freedom and flexibility.

## The Disability Statement

As outlined by the OSU Partnership Grant, a syllabus should include a disability statement, which indicates the instructor's willingness to provide reasonable accommodations to a student with a disability. The statement should be an invitation to students who have disabilities to meet with the instructor—in a confidential environment—to review course requirements and to discuss his or her need for accommodation. Establishing reasonable accommodations should be considered on a case-by-case basis because of the functional limitations of each individual and because the specific demands of the course will vary. An example of a disability statement is given in the previous section on Preparing an Effective Course Syllabus.

The Office for Disability Services (ODS) is the office responsible for determining appropriate accommodations based on the documentation. The accommodation process should be one of collaboration between student, instructor and the Office for Disability Services. Students already working with ODS have provided that office with documentation of their disability. Instructors should not ask the student for documentation; however, they can request that a letter from ODS be sent to verify the disability. A statement on the syllabus and an announcement in class normalizes the accommodation process by treating it as just another part of the course. However, discussion of these issues with individual students must be handled with sensitivity and awareness of the student's right to privacy.

## The Syllabus Has a Personality

Beyond the content of the syllabus is its tone, which can give welcoming or hostile messages. A brief syllabus with strong warnings about policy infringements and no encouraging words about the excitement of the course content may be off-putting. Syllabi that contain humor and enthusiasm can create good first impressions. For example, one syllabus at Ohio State proclaims that the course is "the most exciting calculus course on this or any planet."

One professor at the University of North Dakota (Harris, 1993) posits 10 rules for syllabus construction that take motivation, as well as clarity, into consideration. In a good syllabus, the instructor should:

- convey enthusiasm for the subject
- convey the intellectual challenge of the course
- provide opportunities for students to personalize the content

- convey respect for the ability of students
- state course goals positively so that they appear attainable
- convey the possibility of success in stating grading policy
- adequately specify assignments
- vary assignments according to the type of expertise required
- make provisions for frequent assessment of student learning
- convey the teacher's desire to help students individually

Similarly, spatial layout can make a difference. Syllabi that are well-designed will certainly be more effective than those that are cramped or typed on poor quality machines.

Several experts recommend going beyond the bare basics of syllabus content. Howard Gabennesch, a sociologist at the University of Southern Indiana, speaks of the "enriched syllabus," a syllabus that "is a teaching instrument. It highlights those aspects of pedagogy—goals, means, rationale—that might encourage and enable students to cooperate more effectively with the instructor's efforts" (1992, p. 4). Instructors at Ohio State, meeting as members of a teaching interest group called the Teachers' Round Table, came up with a document in 1994 containing what they called "Course Guidelines." The document provides a template for instructors to use in creating a document that is a supplement to the standard syllabus. Course Guidelines would help students know how to be successful in a specific course by offering the instructor's personal advice on such things as how to manage time well in the course, how to get the most from textbook readings, how to prepare for tests, and the like. The Course Guidelines template is available from Faculty and TA Development. For more detailed information, a step-by-step guide for preparing a "learner-centered" course syllabus is in Grunert (1997).

## Using the Syllabus in Class

It is important to check over the final typed copy for mistakes and typos. If the instructor does not spot them, it is certain that the students will. It is good policy to hand out the syllabus on the first day of class, unless the instructor wants to engage students in participating in course planning. Having a syllabus available early in the course lets the students know that their teacher is well-prepared and it provides an easy way to begin the interaction with students and to reduce some of the uncertainty and anxiety that exists at the beginning of the course.

The instructor will need to review and discuss the syllabus with the students, answering any questions that they may have and providing appropriate amplification where necessary. The instructor will probably find that most student feedback will be generated by the section on grading.

It is vital to have enough copies of the syllabus, and one should allow for the need to replace lost copies and to accommodate students who have registered for the class but do not appear on the initial roster.

If changes are subsequently made in the syllabus, it is a good idea to give them to students in writing. Much ambiguity and confusion can result from half-remembered spoken promises. One way of ensuring an up-to-date and accessible syllabus is to post it on a course web site (with a mention of the most recent update at the top or bottom). See sections in Chapter 6 for more information on using a course web page.

# Introducing the Course: The First Day of Class

Meeting a class for the first time often produces a certain amount of anxiety in new, and even experienced, college teachers. Because the first day of class is so important in setting the tone for what is to come, it is crucial to think carefully about how to get the course established.

## First Impressions

The first impression students have of instructors is their appearance. While there is no university dress code, departments may have explicit or implicit expectations for how instructors should dress when teaching. Even when there is complete freedom in this matter, it is a good idea to think about it carefully. Casual clothing emphasizes accessibility to students while more formal clothing emphasizes professionalism. If new instructors lack confidence about their ability to command the attention of the class, professional dress may provide an ego boost. Many teachers start with more formal dress and go to more informal clothing as the term progresses.

It is important to remember that initial impressions tend to be lasting and that the way instructors

choose to spend the first day of class will set the tone for the entire quarter. Although traditional first-day practice has often meant merely handing out the syllabus, answering questions about the course, and dismissing the students early, it is better to use the time to establish rapport with students, clarify expectations about the course, gather useful information concerning the students, and generate excitement about the anticipated learning experiences in the course.

## Establishing Rapport

A light touch is golden at the first class and interjecting one's own brand of humor will help get things started. However, instructors should be careful of jokes, cartoons, or comments that could be interpreted as racist, sexist, or homophobic. Students who are offended—even if the instructor did not intend to hurt anyone's feelings—will most likely not feel free to voice their objections because of the power distribution in the classroom. It is very difficult to establish a positive teacher-student relationship with students who feel that they are not welcome.

Before the class begins, instructors can help students to know that they are in the correct place by writing the name of the course on the chalkboard. Time before class might be spent by asking students with enrollment problems (wanting to add or drop the course, not sure if they are on the list) to come forward while the others are assembling so that these individual issues can be cleared up. It is important to know in advance the department's policy for approaching these issues. At the start of class, the instructor should state the name and number of the course (and/or the recitation or lab section). It is then important to go through the roster and note which students are present. It is a good idea for instructors to spend a little time introducing themselves. Students are interested in their personal and professional background and interests and will also wonder how they will approach students and the course itself. How much (and what) instructors care to reveal about themselves will depend on individual preferences and style, but the willingness to be personable will help break down some of the forced formality that tends to hinder classroom communication. Students need to know that instructors want to be here teaching them, that they care about the course, and that they will do their best to ensure that each individual makes the best possible progress.

Instructors should make every attempt to learn their students' names as soon as possible. They should familiarize themselves with the names on their rosters before the first day of class. Icebreakers, name tags or name tents, seating charts, deliberate name use, and games can all help instructors and students learn names. Even in large classes, many instructors are able to learn a majority of student names with a little bit of effort. Several articles on learning names are available through FTAD. Instructors should also let students know what they want to be called. As with clothing, the less formal instructors are, the more accessible they will seem. However, a certain amount of formality can help keep students focused on the material that needs to be covered. At some time during the first class—perhaps when they are calling roll—instructors should give students a chance to let them know how they would like to be addressed.

## Clarifying Expectations

After all the informalities, most instructors will hand out their syllabus and verbally go over it, clearly stating such matters as the style and frequency of tests, grading criteria, required materials, and the nature of the assignments. It is also important to offer a summary of the goals for the course and to explain some of the background of the materials that the course will cover and its importance to the students. Time should be allocated for questions. If there are any questions, they should be answered as fully—and as undefensively—as possible. Instructors should try to create an atmosphere where students feel comfortable asking questions about the course. If an instructor wants the class to engage in active learning during the quarter, doing an activity on day one can help set the expectation of participation.

## Gathering Information

The more information instructors can glean from their students, the better they will be able to tailor the course to their needs and interests and incorporate relevant examples. Spending some time gathering student information will also help with learning students' names. There are a variety of methods to getting to know students. Some instructors ask the students to talk about themselves for a couple of minutes to the rest of the group. This allows other students, as well as the instructor, to get to know class members. It is often

helpful in promoting a sense of camaraderie and increasing rapport among students in the class, which facilitates class discussions in the long run.

Other instructors suggest handing out index cards and asking the students to answer questions about themselves on the cards (perhaps including their hometown, major, telephone number, why they took the course, their expectations for the quarter, what worries them about the subject, or similar ideas and personal information). They review these cards later and use them to trigger discussions during the quarter as well as to help learn the students' names. Some instructors even ask students to attach a photo to the card or record their students on videotape or still photographs. When ordered in advance, video equipment for this purpose can be delivered to the classroom by Classroom Services (292-3131; see Appendix).

Another option is to ask the students to write a short biographical essay about themselves. (These pieces can be very revealing about the level of their writing skills!) Instructors can even give an anonymous, not-for-grade test that will reveal the level of students' preparation if they are warned that its purpose is only to help in tailoring the course to their needs. Instructors might also try to discover misconceptions held by their students which might impede learning or cause confusion (see the section on misconception and preconception checks in *Classroom Assessment Techniques* by Angelo and Cross, 1993). In addition, instructors might ask students how they prefer to learn (reading, discussion, lecture, etc.) to assist in planning instructional strategies.

As with opening remarks and personal revelations, instructor comments can make the classroom seem welcoming or threatening. If some students seem uncomfortable talking about themselves, they should not be forced to speak. Through reactions to their remarks, instructors can encourage students to treat each other with respect and as equals.

## Creating Excitement

At least a few minutes of the first class should be reserved for generating some interest in the course material. It is unproductive if the first meeting is entirely consumed by administrative details. There are many ways to create excitement. Instructors might begin the day with a provocative scenario or activity, or close the day with a burning question to be answered at the start of the next class. Some instructors show a short film or slides that introduce the subject area in a lighthearted manner. Another option is for instructors to ask students what they want the course to answer, and then explain at what point in the quarter they can look forward to their interest area coming up for debate. Samples of course content can be provided in various other ways—instructors can speak with excitement about a topic that always generates controversy, praise a film that will be shown halfway through the quarter, preview a guest speaker, outline details of a fun field trip, suggest how revealing a given reading assignment can be, or tell the students how much they will enjoy (and learn from) completing some of the assignments that are to follow. Some instructors also conduct a brainstorming session about things that might be added to the course, place a suggestion box in the back of the room, or have students arrange study groups to help them learn collectively. The possibilities are endless.

It is never too soon for feedback. Instructors might ask students to take a few minutes at the end of class to write their reactions to the first day of class or their expectations for the course as a whole. This not only provides early feedback but indicates an interest in learning. It can help in building a learning climate in which students assume more responsibility for, and feel more actively involved in, the teaching and learning that occurs in the classroom.

## Creating the Desired Atmosphere

All of the aspects mentioned above can be orchestrated by the teacher to produce a first impression of the atmosphere for the course. Research shows that the tone set on the first day of class (sometimes within the first few minutes) can determine student attitudes for the rest of the quarter. If the instructor is formal (in dress, speech, humor) from the beginning, students will expect this for the remainder. If students are let out early on the first day, they may expect early dismissal as an option for future class sessions. Instructors should also establish ground rules on the first day (eating in class, speaking in turn, respecting others). Teachers who want active participation from their students in the course of the quarter (in discussions, group work, debates) should include such an activity in the first meeting. They may also choose to create an inclusive, supportive environment by arranging chairs in a circle or by using an ice-breaker activity. Instructors often find it a good first impression to

begin with such activities, with administrative concerns following.

## Recommended Readings on Course Preparation

Items preceded with an asterisk (*) can be found in the FTAD resource suite.

*Diamond, R. (1998). *Designing and improving courses and curricula: A practical guide*. San Francisco: Jossey-Bass.

*Grunert, J. (1997). *The course syllabus: A learning-centered approach.* Bolton, MA: Anker.

*Kalish, A., & Middendorf, J. (n.d.) Course planning guide. Ohio State Faculty and TA Development.

*McKeachie, W. J. (1999). *Teaching tips: Strategies, research, and theory for college and university teachers* (10th ed.). Boston/New York: Houghton Mifflin.

# 5: Modes of Teaching

*The work of the professor becomes consequential only as it is understood by others. Yet, today, teaching is often viewed as a routine function, tacked on, something almost anyone can do. When defined as scholarship, however, teaching both educates and entices future scholars. Indeed, as Aristotle said, "Teaching is the highest form of understanding."*
—Ernest Boyer (1990)

*The mind is not like a vessel for filling, but like a fire for kindling.*
—Plutarch (A.D. 46–120)

Formal teaching has been in existence for more than 2000 years. Through this long period of time, it has taken on various modes as human society evolves. In college and university settings, some teaching techniques have been used for centuries, such as lectures and labs, while others have emerged only in the last decade or two, such as problem-based and web-enhanced learning. This chapter attempts to discuss some teaching techniques that are commonly used at present, to identify their strengths and weaknesses, and to introduce some best practices.

## The Notion of Active Learning

Some traditional metaphors for learning perceive a learner as an empty vessel or a blank slate to be filled with knowledge. These metaphors have exerted a strong influence on the ways in which we think of teaching and learning in the college classroom. Such views of teaching are reflected in classroom practices that call for the teacher to be the focus of classroom activities and for students to be passive observers. Lecture has long been the standard method of instruction, reinforcing the notion of knowledge as a product to be passed from an instructor to students. Studies of classrooms repeatedly show that nearly 90 percent of time in college classrooms is filled with teacher talk and student note-taking.

However, cognitive researchers argue that knowledge is not simply passed intact from teacher to learner in the learning process, but rather it is actively constructed by learners. As a result, they draw on their previous knowledge, cognitive capacity, and personal experience to integrate new information into the existing knowledge base to further their understanding and influence future learning. Based on such an understanding, national reports and research findings on student learning have advocated actively engaging students in learning through the use of a variety of teaching strategies in the classroom, such as writing, discussions, case studies, and problem solving.

Bonwell and Eison (1991) have observed that active learning usually has the following characteristics:

- students are involved in more than listening
- less emphasis is placed on transmitting information and more on developing students' skills
- students are involved in higher-order thinking (analysis, synthesis, evaluation)
- students are engaged in activities (reading, discussion, writing)
- greater emphasis is placed on students' exploration of their own attitudes and values

In order for active learning to take place, instructors need to structure and organize classroom activities in a thoughtful way and to prepare students accordingly. It has been observed that in some cases the instructor tried to engage students in a classroom activity, but did not plan and implement the activity appropriately. As a result, the activity fell flat and students complained. The temptation for the discouraged instructor was to then return to lecturing.

To avoid such situations from occurring, below are some suggestions for accomplishing a smooth transition. First, if students are accustomed to being passive in a class, they will have a harder time adjusting to being active than if they were asked to participate from the first day of class onward. Therefore, it is important to establish expectations for student active engagement at the very beginning and reinforce such expectations throughout the term. (This is discussed in greater detail in

Chapter 4.) Secondly, it is important that the activities selected are clearly consistent with course goals and well constructed. Using group work with unclear tasks and unrealistic time frames is usually the cause of failure in implementation. Thirdly, both instructors and students must be patient with the changes required for active learning and the instructor must make moderate changes each time. Open communication about what is being attempted and why, along with frequent solicitation of feedback and refinement of the original plan, will help increase the possibility of success.

This section will discuss ways in which instructors can engage students actively through integrating instructional strategies into a lecture or using them as stand-alone methods. The main focus will be on classroom student activities, writing, laboratory and clinical instruction, with a discussion of other possible strategies for active engagement. It will begin with a discussion of the traditional lecture, listing best practices, and then move into suggestions on how to incorporate other methods into the course.

## Lecture

*Effective lecturers combine the talents of scholar, writer, producer, comedian, showman, and teacher in ways that contribute to student learning.*
—W. J. McKeachie

Lecturing is probably the oldest and still most commonly used teaching method in the American college classrooms. It is recognized for the following strengths:

- Lectures can communicate the intrinsic interest of the subject matter. The speaker can convey personal enthusiasm in a way that no book or other media can. Enthusiasm stimulates interest and interested, stimulated people tend to learn more.
- Lectures in university settings can provide students with role models of scholars in action. The professor's way of approaching knowledge can be demonstrated for students to emulate.
- Lectures can convey material otherwise unavailable, including original research or recent developments that have not yet made it to publication.
- Lectures can organize material in a special way. They may be a faster, simpler method of presenting information to an audience with its own special needs. Lectures are particularly useful for students who read poorly or who are unable to organize print material.
- Lectures can convey large amounts of factual material in a limited time frame.
- Lectures can speak to many listeners at the same time.
- Lectures permit maximum teacher control. The instructor chooses what material to cover, whether to answer questions, and other courses of action.
- Lectures present minimum threat to students. They are not required to do anything, which they may prefer.
- Lectures emphasize learning by listening, an advantage for students who learn well this way.
- Lectures offer "face-to-face confrontations with other talking, gesturing, thinking, feeling humans" (Eble, 1988).

However, with the increasing availability of information via various media, particularly through the Internet, attending lectures is no longer considered by many students as the main way to obtain new information. Another challenge instructors face today is the diverse learning styles or preferences of today's students. For many of them, passively listening to lectures is not conducive to their learning. Furthermore, researchers and an increasing number of instructors have identified the following weaknesses of traditional didactic lectures:

- Lectures put students in a passive rather than active role.
- Lectures lack feedback to both the instructor and the student about the students' learning. They encourage mainly one-way communication.
- Lectures require effective speaking skills and use of voice. Such skills are not stressed or trained in most graduate programs and are distributed unevenly among college professors.

- Lectures place the burden of organizing and synthesizing content solely on the lecturer.
- Lectures are not well suited to complex, detailed, or abstract material, nor are they well suited to higher levels of learning such as application, analysis, and synthesis.
- Lectures assume that all students are learning at the same pace and at the same level of understanding, which is hardly ever true.
- Lectures tend to be forgotten quickly.

Bonwell (1995) also has the following observations:

- Most people cannot listen effectively to a lecture over a sustained period of time (research shows this attention span to be 15 minutes or less).
- The relative effectiveness of a lecture depends upon the educational level of the audience (those with more education tend to be better listeners).
- The lecture is less effective with those who learn more proficiently in ways other than listening.
- Lectures are less effective than active learning in promoting thinking or changing attitudes.

Given the strengths and weaknesses of lecturing, while planning a course or class period instructors should consider if the lecture approach is the best way to present the content for achieving instructional goals. Lecturing is very appropriate for some goals and very inappropriate for others.

## Preparing a Lecture

When preparing a lecture, it is helpful for instructors to keep in mind that the learners' minds are not blank slates. Therefore, the lecture should build on students' existing knowledge. It is also helpful to think carefully about the learning goals for students and how the lecture can help achieve these goals. Barbara Davis (1993) suggests the following general strategies on preparing a lecture:

- Be comfortable with the instructional material. This includes reviewing the related course materials and reading lists of colleagues who have taught the course before, and thinking of questions to ask students or to anticipate from students. If possible, sit in the same class taught by an experienced instructor to see how he or she organizes the content and student activities.
- Do not plan to lecture for the full period. Since the attention span of the average student is limited to increments of 10–15 minutes, it is pedagogically desirable to change the format of lecture every so often so that students will remain attentive. Therefore, plan on mini-lectures interspersed with brief student activities, such as questions and answers or inviting students to share related examples or personal experience.
- Be clear about what can reasonably be accomplished by lecturing. While planning to use the lecture mainly for transmitting basic factual information, the instructor should try to demonstrate higher level information processes, such as analysis, synthesis, clarification, comparison, and contrast.

## Starting a Lecture

There are various ways to start a lecture. A thoughtful introduction can instantly capture the interest of the audience. As with a good drama, an effective lecture "hooks" the listeners' attention from the start. It can also help students discriminate between more and less important issues of the major topic and create realistic expectations about what they are supposed to learn from the lecture. The experience of effective instructors suggests that a good way to start the lecture is to point to a gap between students' knowledge base and the content to be presented in order to arouse their curiosity.

The following are some suggestions for starting a lecture:

- Raise a question to be answered by the end of the hour.
  *Example:* "How did the U.S obtain its leadership role during World War II? This is the question we hope to answer during this session."
- Explain the relationship of the lecture content to professional career interests, the real world.
  *Example*: "Today's lecture is about the cost of living indices, a topic in macroeconomics that should help you understand the recent discussions in Congress related to inflation."

- Relate lecture content to previous class material.
  *Example*: "Last week we focused on the history of live theater. Today, we'll be looking at film history, and spend the rest of the week comparing the two forms."

- Tell students how they are expected to use the lecture material.
  *Example*: "Today, I'll offer a specific model of evaluation and illustrate its applicability in several different settings. When you meet in your discussion groups later this week, you'll be asked to apply the model as you discuss the Brown versus the Board of Education decision."

Some other ways to start a lecture include:
- telling a personal anecdote or telling a relevant funny story or joke
- providing an overview of the lecture
- giving the lecture an intriguing title

## Organizing the Lecture

Effective organization of the lecture can help students understand the way in which the points are organized. Besides verbally introducing the topics of the day, it has been proven to be a good idea to write them on the board or an overhead projector for students as a "road map."

Organizing the lecture can be done in a number of different ways, depending on the subject matter itself, as well as the lecturer's personal approach. Barbara Davis (1993) suggests that, after deciding on the topics to present during a lecture, the instructor can organize them according to one of the following methods:

*Topical:* a psychology class that examines how four groups of theorists approach human behavior: social learning theory, developmental theory, psychoanalytic theory, and cognitive theory

*Causal:* a history class that discusses the factors that contributed to the development of the Third Reich and outbreak of World War II

*Sequential:* an education course discusses the U.S. educational system, from preschool to graduate school

*Symbolic or graphic:* a biology course begins with a transparency of a diagram of the human brain; using a plastic overlay, the instructor draws in structural details and gives explanation simultaneously

*Structural:* an anatomy course discusses the anatomical system of human beings

*Problem-solution:* an engineering course looks at a mechanical failure case and discusses possible solutions to the problem, using the theories or concepts students have recently learned

During the lecture, instructors should plan to reserve some time to respond to students' questions and comments. They should not feel pressed to cover everything at the cost of reducing or eliminating the time for student input, as an effective lecture uses varied pacing to help students understand the content better and make critical distinctions between important concepts and trivia.

## Presenting the Lecture

However well structured and carefully prepared a given lecture may be, the importance of the way in which it is delivered cannot be overemphasized. Most people agree that a lecture with excellent content can easily be ruined by poor presentation. It is crucial to grab the attention of students and to retain it throughout the class. For many students, memorable lectures are those presented by instructors with effective presentation skills. The following are some observations made by experienced lecturers on effective presentation skills.

- It is very helpful to vary voice projection and fluctuation, and to speak at an appropriate pace. Important ideas can be cued and emphasized by slowing down, raising voices, and repeating the points.

- Effective teachers often cultivate an inviting learning atmosphere. They try to build good rapport with students quickly by interacting with them before, during, and after the lecture, so that students feel welcome, encouraged, and motivated to be involved. Large-class instructors are encouraged to come out from behind the podium, walk down the aisles, and get close to students if and whenever possible.

- Good lecturers speak to the students, not to the chalkboard, walls, notes, or floor.

- It is important to enunciate clearly and to speak loudly enough. On the first day of class, instructors might suggest that students, especially those sitting at the back, signal if they cannot hear.

- Instructors can infuse a sense of humor into their lecture. However, jokes at the expense of the students or jokes offending the reasonable sensibilities of the group should be avoided. It is easy to offend unintentionally.

- Maintaining eye contact with students is usually important for good communication.

- Enthusiasm should be shown for the lecture. If the teacher does not think the material is worth learning, why should the students?

- Use of gestures and physical movements that help complement verbal statements is recommended.

- Distracting gestures or physical movements such as grooming, intensive pacing, and playing with beard or hair, and repetition of words or phrases such as "uh," "okay," "all right," and "you know" are best avoided.

- Controlling the physical environment can be very helpful for students' comfort and concentration. For instance, instructors may keep the door(s) closed and have the appropriate lighting during the lecture to keep students attentive.

After presenting a lecture or a large amount of information, instructors can engage students in active processing of information by pairing them up and giving them two to three minutes to react, respond, or raise questions or issues about the material just presented. They can ask for volunteers to reiterate the issues or questions raised in their dyads.

Bonwell (1995) advocates the concept of an "enhanced lecture," which incorporates mini-lecturers and student activities. He suggests that the following student activities can be used in an enhanced lecture, using the terms "low risk" and "high risk" to denote the amount of preparation required to ensure success:

Low risk activities include:
- short in-class writing assignments ("minute papers")
- summaries of the previous lecture, readings, etc.
- asking "What didn't you understand?"
- thumbs up/thumbs down response to a statement
- surveys or questionnaires
- formative (ungraded) quizzes
- think-pair-share
- brainstorming
- pair or group development of an outline of the lecture
- structured group discussions (with specific questions provided)

High risk activities include:
- group discussions
- individual or group presentations
- pair or group development of applications related to lecture content
- pair or group writing of test questions related to lecture materials
- student analysis of a problem, poem, photo graph, etc.
- solving of a problem by students, followed by evaluation of each other's work
- role plays illustrating a concept from the lecture

## Soliciting and Responding to Student Feedback during Lecture

It is very helpful to solicit and respond to student feedback during a lecture. Here are some practical suggestions:

- Keeping eye contact with students during a lecture can help the instructor obtain a lot of information. In such a setting, students often provide a multitude of nonverbal clues (rustling of papers, facial expressions) to signal whether they are paying attention to, understand, or agree with the lecturer. The instructor can make adjustments according to such cues.

- It is crucial to solicit questions during the lecture and determine whether students are following the lecture or not. General questions such as "Do you have any questions?" are rarely informative or productive. A more effective strategy is to pose a more specific question, such as "Can anyone explain in your own words why the stock market is so volatile these days?" Another strategy is to periodically ask students to identify one or more main ideas of the lecture. These techniques not only increase interaction during the lecture, but also allow students to assume more responsibility for learning.

- There are many ways of involving students, even in huge groups. For instance, instructors can use a show of hands or hand out different colored index cards that indicate different responses. It often works to call on a student with the correct response and have him or her explain.

- Praise is an important tool in classroom give-and-take with students. Making positive comments when warranted has been shown to increase learning.

## Ending the Lecture

McKeachie (1999) points out that the way in which the instructor ends a lecture is very important. The instructor can use the opportunity to reinforce the major issues being discussed during the lecture. Possible ways to end the lecture include:

- reiterating the main points, without cueing that it is a summary, and indicating where the class is now
- asking a student to summarize the lecture's key concepts
- restating what key issues students are expected to have explored from the lectures and inviting questions and/or comments
- creating suspense, accomplished in a number of ways, such as posing a question for discussion during the next class session

One disturbing phenomenon which instructors commonly experience at the end of a lecture session is that some students start packing bags, talking, or standing up and leaving several minutes before the class is over, which significantly distracts other students and the instructor. A coping strategy is to make it clear at the beginning of the course that such behaviors are not welcome. For instance, one instructor conveys the following expectation to students early on in class, "I will keep my promise to end promptly at the bell, but you must keep yours to not disrupt the class by preparing to leave early."

## A Few Words about Preparing Lecture Notes

Preparing effective lecture notes sometimes presents a challenge to novice instructors. In this regard, there is no easy answer to the question of what kind of lecture notes work the best; it depends on each individual instructor. According to Ruth Day (1980), lecture notes vary widely as to the amount of information they directly display, the extent to which they rely on overt organization structures, and the general formats they choose to use. Following are some commonly shared lecture note formats:

*Verbatim Notes*. This format entails a verbatim script of the entire lecture, which appears to be a common practice among new instructors. One advantage of this approach is that, with detailed information displayed in written form in front of them, instructors can reduce the number and complexity of things they need to think about while lecturing, therefore feeling more comfortable and confident. This is particularly important for beginning teachers. However, according to Day, one drawback to this approach is that the lecturer tends to rely heavily on the lecture notes and tends to read instead of talking more naturally. In addition, preparing this type of lecture notes is usually very time consuming. It also discourages students from asking questions and making comments during the lecture, since the instructor is usually concentrated on the lecture notes instead of looking at students and interacting with them. Another disadvantage of using such lecture notes is that instructors tend to confine themselves behind the podium instead of moving around and getting close to students.

*Outlining*. As instructors become more experienced and familiar with course materials, many become progressively less reliant on lecture notes, therefore streamlining the notes. One such lecture note format is *outlining*. The instructor improvises the lecture based on notes which contain only the highlights of the content in simple words or phrases. As a result, the instructor tends to be more focused on presenting the concepts and ideas instead of individual words. He or she also tends to be more flexible and talk more naturally instead of reading the lecture notes. Furthermore, the instructor who uses outlines usually moves around instead of remaining tied to the podium. There are disadvantages of using such lecture notes, though. If the instructor is not very fluent in front of an audience, mental and verbal fumbling may result. There is also an increased danger of not making the points of connection clear to the students. Some lecturers simply jot down the major points in the order they want to discuss them. The advantages are similar to the outline approach, but there is a danger of forgetting why a specific phrase or example was included. This method

necessitates a very firm grasp of the material.

*Nonlinguistic Formats*. An alternative to the linguistic formats is the use of "tree" diagrams, computer flowcharts, concept maps, and the like. Another choice is a pictorial format, which includes all nonlinguistic symbols to be found in lecture notes. Nonlinguistic formats carry similar disadvantages and potential problems as the other non-verbatim forms of notes already discussed.

Instructors need to clarify what purposes their lecture notes serve and whether they prefer to work with linguistic or nonlinguistic notations. Once the format is chosen, the instructor may wish to examine the other possibilities to determine if they can be combined to produce a more useful and appropriate format. Typically, a lecturer teaching for the first time will use comprehensive notes, which will become progressively briefer as the instructor becomes more familiar with the material and gains confidence. For many new teachers, the first time lecturing can be less nerve-racking if the lecture is clearly mapped out on paper beforehand.

# Leading Effective Discussions

An effective way of promoting student active engagement in learning is to provide opportunities for students to process and verbalize what they are learning, so that instructors are able to determine to what extent students are internalizing the information and to provide pertinent feedback when it is most needed. Engaging students in discussing course content is one way to promote active learning. In addition, discussions can provide a socializing mechanism, examine and clarify confusing concepts, and foster critical thinking among students. In general, if used effectively, discussions can be invaluable for any of the following goals of instruction:

- to help students learn to think in ways that are particular to the discipline
- to help students learn to identify and evaluate the logic and evidence that form the basis of their own and others' positions
- to give students opportunities to formulate applications of principles
- to help students identify, formulate, and solve problems using information gained from readings, lectures, and/or life experiences
- to use members of the group as resources
- to gain acceptance for information or theories counter to the beliefs previously held by the students
- to develop motivation for further learning
- to get prompt feedback on how well objectives are being attained

## Setting Discussion Objectives and Formats

Well-defined objectives are an important prerequisite to a good discussion. They also help determine the kind of discussion appropriate for the situation. It helps to view discussions along a continuum from *targeted* discussions, where the instructor carefully controls the discussion and asks questions requiring specific responses, to *open-ended* discussions, where the instructor allows the students to formulate the questions and control the discussion. If the objective is to assess students' comprehension of course material or review or summarize content, targeted discussions will serve best. If the objective is to promote critical thinking, curiosity about the topic, or tolerance for opposing viewpoints, open-ended discussions are most appropriate.

A key difference between a targeted and open-ended discussion is the kind of question asked. Questions asked in a targeted discussion are often structured to produce short, convergent responses. Questions in an open-ended discussion provide more latitude for response. Some examples are:

*Targeted questions*
- What is the definition of an adjective?
- What are the stages of cell division?

*Open-ended questions*
- What are some ways we might solve the energy crisis?
- Given the limited medical data provided, how would you approach diagnosing this patient's problem?

In a targeted discussion, the instructor tends to keep a fairly tight rein on the direction of the discussion. In addition to using convergent questions, the instructor can focus the discussion by intervening after each response to comment upon it, summarize it, or redirect the question; mapping the direction of the discussion on the blackboard or overhead transparency; limiting the duration and number of responses; and moving quickly from one question to another. In contrast, the instructor in an open-ended discussion would act differently by using broader questions, allowing ample time to respond, and encouraging a lateral

rather than teacher-directed response pattern (e.g., "Does anyone have a comment on X's response?" or "Feel free to jump in and respond to each other"); and reducing his or her role as authority by sitting down or remaining quiet.

Although the type of discussion questions must be tied to the purpose of the discussion, there are findings to indicate that questions that are middle-range in their openness elicit the highest frequency of response. John Andrews writes, "Perhaps the most important quality to grasp is a subtle blend of structure and freedom which gives a discussion momentum and yet does not let it wander indiscriminately" (1982, p. 147). In a study of questioning behaviors, he found that when instructors used what he called "playground" questions, i.e., questions that designate the intellectual sphere for discussion and then give students latitude for answering, they got better results than when they asked very open-ended "brainstorming" questions, convergent "quiz show" questions, or highly unfocused "general invitation" questions, such as "So what do you think about Plato?"

## Setting the Expectations and Establishing Ground Rules

Students look for clues to an instructor's expectations for them in a number of ways on the first day. Therefore, instructors who emphasize that discussion will be an important part of the course should convey their expectations, set the tone during the first class by putting it into practice, and reinforce it throughout the course. Some instructors go on to define the criteria for receiving credit for class participation.

Establishing ground rules for discussions, especially in discussing multicultural or controversial issues, can be a way of building civility in class and having students take ownership in ensuring an environment conducive to learning. By gaining class consensus on ground rules, instructors can expect more student support and participation in their enforcement. Following are four suggested ground rules developed at the University of Washington:

- *Individual representation*. Rather than stereotyping and making generalization about individuals from their same cultural groups, instructors can encourage students to present themselves as individuals instead of representing a cultural group by using "I" instead of "we" statements and speak of their own personal experience. Personalizing discussion invites diverse perspectives from students who often find themselves on the fringe of university life, such as gay, lesbian, and bisexual students; nontraditional-age students; and students of color. Instructors can ask students who tend to monopolize discussions to self-monitor and make room for quieter students. At the same time, instructors can encourage students who tend to be quieter to contribute and enhance learning by sharing their perspectives and experiences.

- *Confidentiality*. Instructors can encourage students to take concepts and ideas from class and discuss them freely. However, they should make it clear to students that personal stories or issues shared by individual students should be kept confidential and the property of the class.

- *Respectful listening.* Instructors can encourage students with differing points of view to have respect for each other and raise questions by listening first. Instructors can point out that if someone raises a point that others disagree with or find offensive, it is important to remember that the human being behind the question or comment deserves respect.

- *No put-downs.* Tied to the notion of respect is the ground rule of no put-downs in class, not even the humorous variety. To put down one person often serves to discourage open and honest exchange of ideas among the whole group.

## Getting Discussions Started

There are many different techniques for leading discussions, from the most nondirective to the most programmed. Here are some good ways to get discussions moving:

*Start with a common experience.* One way to launch a discussion is to begin with a concrete, common experience by a presentation, film, or role play, which illustrates the issues to be discussed. Following such a presentation the instructor can present to students discussion questions such as, "What are your immediate reactions?" or "How did the film producers portray the Civil War?"

*Start with a question.* Another way to start a discussion is to ask a specific question that will enable students to contribute their thoughts in a brainstorming fashion. For example, a finance

instructor planning to talk about personal investment can start with the question, "What do you know about investment?" Questions that speak well to students' puzzles can be obtained by asking students to submit written questions in advance. Once the first question has been asked and responded to, further questions come easily. The trick is to phrase the first question and present it as clearly as possible. In general, instructors can approach the first question in one of the following fashions:

1. Use an open-ended question that is not too general or too cumbersome for students to respond to.

2. After asking the question, wait at least 10 seconds before repeating or rephrasing the question.

3. Provide an example to illustrate the question if it appears too abstract for students to understand.

*Start with a controversy.* One effective way to create a heated discussion is to pose a controversial issue and then ask students to respond by choosing a side and offering their rationale for their choice. An easy way to create controversy is to play devil's advocate. The instructor should clarify after the exercise that the position was taken for the purposes of discussion. To foster students' critical thinking skills, the instructor can ask students from each side to offer several reasons or arguments based on literature reading and personal experience, if applicable, then invite students from the opposing side to reflect on these arguments. It is very helpful for students' reference if the instructor can display these counter-arguments on the board.

*Place students in buzz groups.* In this format, a class is split into subgroups for a brief period to discuss a case or problem. Groups can be asked to come up with one hypothesis that they see as relevant, with one application of a principle, or an example of a point. In order to make this method effective, students must be given an explicit task and a designated time frame to work on the task. They should be instructed to prepare to report the discussion results to the entire class after small group discussions.

*Ask for responses in writing.* One way to enhance discussion quality is to give students some time to ponder and write down their response to the question before the discussion starts. Usually two to three minutes is ample for students to prepare their answers. It is very helpful for instructors to encourage students to be creative by using the writing as a chance to brainstorm. Then invite them to share their thoughts with the rest of the class. Often quiet students or non-native speakers of English will speak up if they have the words before them. Also, written responses often lead to more reflective discussions.

## Managing Discussions

Managing discussions often means dealing as smoothly as possible with the problems that arise. Here are some common problems with suggestions for how to deal with them:

*Students who talk too much*. It is almost inevitable that in each class there are students who tend to talk too much and dominate discussions, which can have a negative impact on the participation of other students. One way to approach the talkative students is to avoid looking in their direction or to structure the discussion in such a way that precludes those individuals' constant participation. For instance, instructor can signal their over-participation by saying, "Let's hear from someone who has not yet contributed" or "Someone else other than So-and-So." Some instructors use color-coded chips to control participation. In such cases, each student is given several chances to speak during class. Once a student uses up his/her chips, s/he has to withhold her/his participation until others have used up their chips. Another coping technique is to talk to the dominant students individually outside of class, bring the issue to their attention, and ask them to give other students the chance to participate.

*Students who will not talk.* In each class there are also inevitably students who will not talk during discussions for various reasons. Instructors who expect inclusive participation need to set clear expectations and structure the class in a way that encourages these students to be involved. It is also important to reinforce participation by using different strategies, such as combining voluntary participation with rotating calling on students. One way to approach non-participating students is to organize small group activities, in which these students are more likely to participate. Smaller groups may help put these students more at ease. Another strategy is to occasionally ask them opinion questions (e.g., "How do you feel about

this?"). This may encourage participation by reducing students' fear of answering incorrectly. Yet another strategy is, as mentioned above, to have students write out their answers to a question before calling on them. Having the words written out may make it easier for a shy or fearful person to speak up.

*The discussion that turns into a heated argument.* During discussions different viewpoints can become heated and turn into conflicts. If such conflicts are left unattended, they may cause continuing trouble. Here are some ways to resolve them:

- If the solution depends on certain facts, the instructor can ask students to refer to the text or another authority.
- If there is an experimentally verified answer, the instructor can use the opportunity to review the method by which the answer could be determined.
- If the question is one of values, the instructor may use the occasion to help students become aware of the values involved.
- The instructor can list both sides of the argument on the board.
- The instructor can take a strong position as moderator, preventing students from interrupting each other or speaking simultaneously. She or he can refer back to ground rules already set for discussion, such as asking students to focus conflict on ideas rather than people and to resist being judgmental.

*Unclear comments or hesitant participation*. The instructor can encourage students who have made unclear or confusing comments to give examples or reiterate their viewpoints for clarification or verification. They can encourage students who are hesitant to participate through enthusiastic nonverbal cues and patience, or asking for elaboration and examples at appropriate points.

*The discussion that goes off track*. To keep discussions from going off track, some instructors put on the board discussion questions or issues they want to concentrate on or summarizing the discussion on the board as it proceeds. Stopping and asking a student to summarize where the discussion is at the point it appears to go off track may also help.

*The student who aggressively argues with the instructor*. When students argue for the sake of argument, instructors will almost always lose if they take the bait. This situation often occurs when instructors are going over exams or assignments. Students who attack usually want attention, so simply giving them some recognition while firmly moving on often takes care of the problem. If students are simply trying to embarrass the instructor, they may seek to make him or her defensive with such comments as, "How do you *really* know that . . . ?" or "You're not really saying that . . . ?" Such questions can be handled by playing boomerang. The instructor might say, "What I'm saying is . . . , but now I'd like you to share your perspective." Turning the question back to the questioner forces him or her to take responsibility for his or her opinion. Other ways to handle these situations include:

- *Confrontation.* Instructors can confront the questioner with their reactions to his or her behavior. "I am uncomfortable with the indirectness of your questions. What I really hear you saying is...."
- *Active listening.* Instructors can paraphrase the message they heard and check out the accuracy of their assumptions before responding.
- *Locating.* Instructors can ask the questioner to explain the context behind the question.
- *Reframing.* The focus can be on clarifying the assumptions behind the person's argument and then inviting her or him to see alternative possibilities. "Your argument is premised on the idea that people cannot be trusted. How would you restructure your position to reflect the assumption that people can be trusted?"
- *Deferring.* Often, the best strategy is to invite students to come up after class and arrange for a time to talk about the disagreement further.

## Building Rapport

Perhaps nothing is more important to a healthy discussion than good rapport between the instructor and students. Many students test the waters in discussions to see how their ideas will be accepted: if the instructor lacks sensitivity, they may become unwilling to contribute. Some behaviors on the part of the instructor (and students) that promote the establishment of good rapport for discussions include:

- willingness to share personal experiences
- willingness to admit uncertainties
- openness to new ideas
- ability to suspend one's judgment of others
- ability to listen carefully to others' statements
- tolerance of opposite points of view

Perhaps the most important steps to building rapport are taken on the first day of class. The section entitled "Establishing Rapport" in Chapter 4 discusses this in greater detail.

## Verbal and Nonverbal Instructor Cues

During a discussion the instructor can promote an atmosphere of trust and rapport by offering some of the following questions or comments:

- "Can you think of a situation in which this notion might apply? Might not apply?"
- "That's an interesting idea, tell me more."
- "I don't know either, but that's a very interesting question. Can anyone help us unravel ourselves here?"
- "I'm not sure I understand you. Were you saying that the survey questions were too personal? Can you give me an example?"
- "Feels to me like we've kind of strayed from the point. Have we?"
- "Let's not forget the basic problem we're trying to solve."
- "What's the first step?"

Nonverbal ways in which an instructor can create rapport during a discussion include:

- showing enthusiasm when listening to student responses by smiling expectantly and nodding as the student talks
- keeping eye contact with the student who is talking
- walking toward the person who is talking, even if there is only space to take a few steps in any direction
- walking around the room throughout a discussion so that students will view people in different parts of the room
- looking relaxed by leaning against the wall, sitting on a desk, or pulling up a desk or chair and joining the class
- arranging students' chairs in a circle or in a configuration in which they can see each other talking
- standing by students who have not contributed to the discussion–proximity may draw them into the conversation

## Creating Closure

Good discussions end with a summary so that students will be reminded what important points have been explored. The advantage of active learning techniques such as the discussion is that students have the opportunity to verbalize course materials for themselves and receive feedback in class from the instructor on how well they understand the material. In addition to showing students why the discussion was important to their learning, a summary provides the opportunity to fill in points that were not covered and to praise the class for the quality of their responses.

# Incorporating Writing in Instruction

Writing has been recognized as an important vehicle for individuals not only to communicate their ideas but also to generate them. Writing, then, can be used as an effective tool for learning by creating occasions for students to fit new information into their knowledge base and to expand their thinking. The importance of writing in the thinking process implies that writing should occur in courses throughout the curriculum. The development of writing skills has been recognized as an essential accomplishment of a college graduate for which all instructors, not only those in the English department, have a responsibility to facilitate.

Many instructors from other fields, feeling that they have not had special training in the teaching of writing, are uneasy about the role they are expected to play. They are also reluctant to add the grading of great amounts of written work to their existing workload. Fortunately, experts in the teaching field are able to provide reassurance on both counts. The emphasis on writing as process stresses the role of the instructor as a facilitator of the thinking process rather than as "guardian of the semicolon," the technical expert on points of grammar. Suggestions for setting and responding to writing assignments in ways that engage students without creating excessive burdens on the instruc-

tor are also available. They revolve around two main thoughts:

1. *Writing assignments need not be formal or lengthy*. As a medium for actively engaging students in learning, writing can be used as a tool for discovery and understanding in an ongoing way that is integral to course activities. For example, an instructor might ask students to take a minute to write down their ideas before they respond to a question. The instructor might ask the students to write a short summary of what they learned in class or any questions that they still have about the material after class. Good writing assignments are meaningful, related to the goals of the course, clearly defined, and practical for both student and instructor.

2. *Not all written work needs to be graded*. In fact, instructors who give only formal writing assignments to be graded perpetuate the notion that writing is only an end product of learning, rather than a tool to be used in the process. Writing can be incorporated into the class to serve several different functions, including a feedback and class management tool for the instructor; a way of having students reflect back on their learning, themselves, and their audience; and a means of sharpening students' writing skills.

As a feedback device, the instructor can have students write an anonymous one-minute reaction paper at the end of class or after a particularly intense discussion to solicit input and to test for understanding. The results can be reported back to the class at the next session and/or incorporated into the course design.

Journals can help students reflect back on unresolved questions and conflicts raised for them in class and they can also assist students to see how they have grown during the course . These journals can also serve to personalize classroom learning if they are turned in periodically or at midterm for instructor comment or response.

# Writing Assignments

To incorporate writing as an integral part of the learning process, instructors can suggest a variety of ways in which students can write as the course progresses. Ways that have been used effectively across courses include:

## Reading Journals

Instructors can ask students to keep journals to chronicle their understanding of texts that they are reading for class. Students can write entries that reflect the main idea of the reading, major points covered, and the questions that they have after reading the text. To increase the level of cognitive activity involved in the reading assignments, instructors can suggest that students write about possible applications of the ideas, ways in which the material fits with other course readings and information, and their critical evaluations of the merit of the ideas or readings. Instructors may elect to review these journals periodically, reacting to points that they find particularly interesting, or they may view the journals as personal aids to scholarship for the use of the students alone.

## The Précis

Instructors can ask students to write a very brief summary of the major points of a reading assignment or class session. Often, they may wish to specify a certain word limit, such as 25 words, in order to stretch students' language skills and cause further reflection on the material. Once again, these may be collected—they may serve as an attendance check or to motivate students to keep up with their reading—or they may be used only to help focus a discussion or for the students' personal use. When collected, they may be graded very quickly. Elaborate comments do not have to be given if the précis paragraphs are viewed as formative documents.

## Brainstorming/Freewriting

Instructors can ask students to jot down ideas very quickly in response to a given problem or stimulus. They should be encouraged to focus on generating ideas rather than worrying about the format that their writing takes. Brainstorming can be used prior to the introduction of new material to enhance discovery and curiosity. Instructors can ask students to guess the causes of a historical phenomenon before these are discussed in class; they may ask students to predict the results of a scientific experiment before it is demonstrated. The lists that result can be shared in groups or in class before the material is formally discussed. Brainstorming and freewriting can also be used as effective summarizing techniques. Students may be asked to compose "laundry lists" of things to remember when diagnosing a certain virus or characteristics of

abstract art. They can compare lists to supplement their own with those of their classmates or to correct misinterpretations. Once again, these assignments are most effective when they are viewed as parts of the learning process rather than as endpoint assessment devices.

## Papers

Although the formal term paper can be a valuable learning activity for many courses, some instructors who once gave their students long research papers are discovering that assigning one or more five-page papers, usually requiring some sort of analysis of ideas or readings, is both easier to evaluate and more useful for their students' learning. To focus students' work, it is helpful to pose a direct question (e.g., "What problems do sociologists encounter in defining 'deviance'?") and convey as clearly as possible the instructor's expectations concerning the appropriate style and tone of the writing, the desired length, and the kind of documentation required. Exemplary papers from past offerings of the course can be made available for students to refer to. If the assignment calls for a prescribed format, such as a laboratory report, an outline of the format or examples of good lab reports will help the students. Students may also be encouraged to look in scholarly journals in the discipline for examples of writing to use as models. When longer papers are assigned, instructors have found that requiring drafts in advance of the final paper helps students pace themselves better and gives the instructor a chance to provide direction while the ideas are still in process so that the resulting final papers are of higher quality. Drafts also give instructors the opportunity to note stylistic and grammatical problems for students to correct so that they learn about writing while they are engaged in a specific revision task. Drafts can also be posted on electronic mail exchanges so that students can receive advice from their peers while they are composing a paper.

A discussion of using writing in assessment through essay exams and on grading student writing is contained in the sections on essay exams and grading writing in Chapter 7 of this handbook. The Center for the Study and Teaching of Writing (292-5607) has a variety of helpful publications for instructors on giving writing assignments and responding to them. Writing Center staff will also consult with faculty and teaching associates on these issues. Students can be referred to the Writing Center for individual help.

# Cooperative Learning

Many of the strategies discussed in this chapter involve having students work in groups of two or more to help each other learn. Commonly identified as *cooperative learning* (often interchangeably called *collaborative learning* or *peer teaching*), this teaching technique fosters students' face-to-face interaction, interpersonal and small group skills, group processing, individual accountability and personal responsibility, and positive interdependence. The benefits of cooperative learning have been recognized in many research findings over the past decade, particularly by Johnson, Johnson, and Smith (1991) and Bruffee (1993). They have identified that the beneficial outcomes of cooperative efforts include positive interdependence, promotive interaction, positive relationship, psychological adjustment and social competence, and effort to achieve. In addition, cooperative learning gives students the opportunity to affirm their learning through teaching others ("To teach is to learn twice") and provides students with other styles of teaching that may be more accessible to them.

In addition to the works by Johnson, Johnson, and Smith and Bruffee, the recent *Collaborative Learning: A Sourcebook for Higher Education, Volumes I and II*, published by the National Center for Postsecondary Teaching, Learning, and Assessment (1993–94), contain many descriptions of specific approaches to cooperative learning. A few commonly used approaches are introduced below.

## Peer Learning

Classes can be divided into groups of about five students with a mixture of more and less knowledgeable students in each group. The groups are given learning tasks that will require them to share knowledge and experiences. The task may be to answer some review questions, pose some critical issues about a topic, solve a problem, apply some principles, or create a product. If the groups are balanced well, the task is clearly outlined, and the allocated time is appropriate for the task, the group will engage in peer learning and increase their abilities to function in an interpersonal setting through the process. The instructor's role is to serve as designer by carefully structuring the groups and tasks and to serve as facilitator while the groups are working, helping with interpersonal or task-related problems as they arise.

## Problem Solving

The use of problem solving as a strategy for active engagement and practice has been a traditional part of courses in such fields as mathematics and physics (Woods, 1994) and has now extended to other fields as well. The problem-solving approach involves structuring learning around some central questions or typical practical cases in the discipline. Often, however, the instructor's task is more elaborate than simply devising good problems. An essential part of helping students solve problems is the creation of an affective climate that is conducive to risk-taking and the free exchange of ideas. Direct instruction in the techniques of problem solving is also often required for students who have not had much problem-solving experience. The instructor will need to model how professionals in the field go about defining problems, gathering data, generating hypotheses, and supporting conclusions or solutions. In addition, researchers in teaching problem solving have found that helping students be aware of their problem-solving strategies is a characteristic of effective teachers. Often, having students "talk through" a problem out loud or work in pairs or groups increases their problem-solving skills.

An ineffective approach, which happens more often than desired, is for the instructor to do all the problem solving. While modeling is important, it is also important for students to try to apply their skills while the instructor is there to monitor their work and offer them assistance. Stephen Monk (1983), a mathematics instructor, observed of a class that he taught, "My TAs and I spent all the course time telling students how we did mathematics. Their job was to imitate us when they did the homework. The message was that learning was to take place not on course time but on their own time, away from the teachers and away from one another."

A very effective way to teach is an instructor demonstration of a particular problem-solving approach immediately followed by an opportunity for students to try a similar problem. Students can be asked to come to the board or overhead to show the steps they used, to switch papers with another student and compare work, or to list aloud the steps they used and the solution they reached. The results will be much better than a prolonged demonstration during which the instructor is repeatedly solving the problems him or herself.

## Case Studies

Very broadly defined, a case study is a teaching instrument that portrays a real life situation for student analysis. Case studies are used frequently in professional schools to enable students to develop their skills in analyzing situations and making sound decisions, but cases are becoming very popular in other divisions as well. Often, a prepared case can be used, but when new cases are developed, the instructor should focus on an important dilemma or issue, create enough detail for the students to comprehend the case, and choose a situation about which there is room for debate and several possible courses of action. Students are asked to read the case before class. During the class session, the instructor first makes sure that the students understand the details of the case, then leads them through an analysis of the problem and discussion of possible alternative courses of action. The instructor serves as discussion facilitator, probing for detail, support for arguments, evidence, and the generation and critique of solutions.

## Learning Cells

Learning cells are a variety of peer learning that can be used when it is important to have students verbalize what they have read. Reading assignments are given before class and part of class time is spent with students in pairs telling each other what they read. Students may have read the same material beforehand, in which case they are demonstrating their comprehension and recall and getting an opportunity to clarify their understanding with one another, or they may have been assigned different readings, in which case they can complement each other's knowledge with some different information or perspectives.

## Discovery Format

In a discovery or inquiry format, the instructor sets up a novel situation, an interesting puzzle, or an open-ended question that students are asked to explore using their own creativity and resources. They may be asked to hypothesize, based on only partial information, on what building materials were used to construct an ancient building; they may be asked to construct a device for measuring something or making certain musical tones; or they may be asked to interview each other about what triggers depression in their lives. The instructor once again serves as designer of the activity,

choosing activities that are likely to lead students to accomplish a learning goal, and as facilitator during the process, helping students stay on course and locate the resources they need. In the discovery format it is important for the instructor to stay as nondirective as possible so that students develop independence and personal excitement.

## Role Playing

In many courses, role playing can be used to develop empathy; to enliven a historical, philosophical, or literary topic; or to provide a concrete enactment of an abstract topic. Volunteers are asked to portray certain roles and given sufficient information on the context to enable them to improvise dialogue and actions. In some classes, the instructors have attended class in the role of a character and have enlisted colleagues to join them in enacting a situation for the students. The class is asked to play the role of those in the situation as well, asking questions or engaging in dialogue in ways that would be appropriate for the setting. Role playing is not limited to classes in the humanities or social sciences: creative instructors in the physical sciences have used students to model DNA or demonstrate chemical bonding by joining students together in the appropriate configuration.

## Debate

Using a central aisle or a real or imaginary boundary to divide the class space in half, the instructor poses a debatable proposition and asks those who agree to sit in one section and those who disagree to sit in the other. (The instructor may also want to create a third section for those who are undecided.) The instructor then moderates, asking students from one section, then the other, to support their position. At set intervals of perhaps 15 minutes, students are given the opportunity to move to another section, based on whether they have changed their positions through listening and participating in the debate. A variant on this theme is to have students argue for the opposite of their original positions by changing the section designations after the students have already chosen positions. The instructor is responsible for setting up the proposition, enforcing the rules of the debate, and summarizing the discussion and results of the debate. More formal and elaborate variants of debates involve multiple weeks of preparation by students and can represent part of the final grade.

## Simulations

Simulations allow students to engage in learning activities that may otherwise be too time consuming, too expensive, or ethically questionable (requiring animals or requiring intervention into human behavior). Using an established game or computer software or creating a scenario, the instructor develops a simulated environment within which students will engage in activity directed toward a learning goal. They may be asked to set up companies and create mergers; they may be asked to develop marketing packages that they will present to a real or simulated client; they may be blindfolded to experience sightlessness; or they may be required to recreate a military battle or other historical event using a new strategy. The role of the instructor is to identify and preview established simulations for use in the course or to create scenarios that are likely to engage students in experiential learning directed toward a course goal. During the simulation, the instructor serves as a facilitator.

## Problem-Based Learning

Problem-based learning (PBL) is a technique that is characterized by using real-world problems as a context for students to learn critical thinking and problem-solving skills. John Curry of The Ohio State College of Medicine (2001) points out that PBL is different from lecture in the following ways. It substitutes active, student-centered, team-oriented learning of information for the delivery of course content by the instructor. It emphasizes learning within the context that the learned information is to be used rather than memorization of isolated facts. It incorporates the development of skills required to use the learned information as a part of the learning process.

In a PBL setting, students are presented with a problem (e.g., case, videotape, research paper, news of the day). They are placed in small groups, organize their ideas and existing knowledge related to the problem, and attempt to define the nature of the problem. They discuss the problem and possible solutions by identifying learning issues, i.e., aspects they do not have knowledge of and need to in order to solve the problem. They then rank the learning issues in order of importance and distribute learning tasks among group members. When the groups reconvene, group members share their newly learned knowledge with each other and generate synthesized solutions to the problem. If

needed, they repeat the process until the problem is satisfactorily solved.

The role of the instructor in PBL is that of a "guide on the side" rather than a "sage on the stage." He or she guides, probes, and supports students' initiatives. Instead of lecturing, directing, or providing easy solutions, the instructor uses the Socratic approach and guides students by asking them questions to clarify, verify, or further students' pursuit of needed knowledge.

Cooperative learning requires good planning in order to be successful. First, group work as a learning strategy must be appropriate for the course objective. Second, the group task must be clearly outlined, feasible, and relevant to the course objectives. It often helps to provide students with an explicit rationale for group work. Third, group membership must be determined carefully and positive social interaction within the group must be maintained. Often, instructors assign groups based on instructor awareness of student abilities or social skills. Some teachers assign specific roles, such as task director, time keeper, social monitor, and reporter to group members. Fourth, group work must be assessed appropriately. Some instructors ask students to rate each other's performance and some ask for self-evaluation. Most give students some combination of individual and group grade, although for some tasks, one or the other is chosen.

More information on problem-based learning can be obtained from Faculty and TA Development.

# Service Learning

The late Ernest Boyer called upon institutions of higher education to become more vigorous partners with local communities in resolving social problems through what he termed a "scholarship of engagement" (Boyer, 1990). Service learning is a newly emerged teaching approach that provides one way for universities and colleges to fulfil their obligations to prepare good citizens. It is also regarded as an effective strategy for enhancing student learning, improving the quality of the student experience, and increasing higher education's visibility and responsiveness to the local community. More specifically, service learning promotes the development of cognitive complexity, citizenship skills, social responsibility, and active learning while responding to pressing issues and needs in the larger society.

## What is Service Learning?

While many definitions of service learning appear in the literature, an emphasis on active learning, reciprocity, and reflection is common to all. Effective service-learning includes the following elements:

- The service activity must be connected to classroom learning and theory.
- Students learn and develop through active participation in thoughtfully organized service that is conducted in and meets the needs of the community. It is a coordinated effort between the community and an institution of higher education.
- The learning experience includes structured time for the students and community participants to reflect on and analyze the service experience.

More specifically, Rhoads and Howard (1998) define academic service learning as "a pedagogical model that intentionally integrates academic learning and relevant community service" (p. 1). Implicit in this definition are the following dimensions:

1. Service learning is a strategy for teaching.
2. There must be a planned effort by the instructor.
3. Learning from service must be connected to classroom learning and theory.
4. Community service placements must be connected to course objectives and learning outcomes.
5. Education for citizenship is an intended outcome.

## Developing and Planning the Service Learning Curriculum

Designing service-learning courses takes time and depends upon relationships and partnerships with appropriate community service site placements. While shown to be an effective teaching strategy, service learning is not appropriate for all courses. Instructors who plan to teach service-learning courses by integrating community service into the design of academic courses need to contemplate the following questions:

- How can service be integrated into this course and used as a "text" to enhance understanding

of this particular discipline? (It is important to think about the service component of any class not as an add-on requirement but as integral to the teaching of course content and achieving course objectives.)

- How will the course be structured to integrate theory and practice, service and learning?
- What strategies will be used to help students relate the service experience to the academic subject and focus of the course?
- How will students engage with the community and identify appropriate sites?
- How will student experiences in the community be monitored?
- What are the goals for student learning outcomes in the service-learning class?
- What are the goals for community outcomes?

## Working with the Local Community

Establishing a relationship of trust between an instructor and community partner is a necessary and important dimension of service learning. Instructors need to be prepared to invest time for collaborative planning of appropriate placements. Further, the concept of reciprocity is integral to effective and responsible service-learning. Reciprocity implies that the service provided in the context of a course is a needed service, determined by the community with whom students will be engaging.

Successful service learning requires purposeful planning by both the instructor and community partners. All partners prior to the course should reach mutual agreement on responsibilities and outcomes of the service placement. Planning involves discussion about goals and needs of all partners as well as appropriate tasks and activities for students on-site. Sensitivity to resources and constraints of the community organization is important to effective partnerships. Development of a partnership for a service-learning experience necessarily involves viewing the benefits and costs from the perspective of the participating organizations. While an influx of student volunteers is helpful to organizations, it also imposes the burden of additional training and supervision on the part of usually short-staffed agencies and schools. Agreement about orientation, training, and supervision should also be discussed.

Sustaining authentic and effective partnerships requires on-going involvement and monitoring on the part of teachers and community partners. Regular meetings with community site staff help assess the quality of the experience for both students and community as well as provide an opportunity to resolve problems as they arise. A sustainable partnership is one that matches up the academic strengths and goals of the university with the assets and interests of a particular community.

## Preparing Students

Thorough orientation of students to the community organizations is essential to a well-orchestrated service-learning course. Students may be introduced to people, issues, and communities with whom they are unfamiliar. Good intentions alone are not enough to ensure that students approach new environments with respect and courtesy for those with whom they may come into contact. Preparation should include an orientation to the site, volunteer expectations, and knowledge about the issues that students will encounter on-site.

### Developing Reflective Learning Experiences

Reflection is generally considered the means by which learning is connected to service. The learning in service learning evolves, in part, through structured activities designed to facilitate thinking about the service experience. In short, reflection insures the connection between thinking and doing, service and learning. Eyler, Giles, and Schmiede (1996) concluded from their research on the use of reflection in service learning that effective critical reflection is:

*Continuous*: an on-going part of learning in the course that provides continuity through each event or experience; reflection occurs before, during, and after the experience

*Connected*: the link between service and the intellectual and academic interests of students, resulting in the synthesis of action and thought

*Challenging*: an intervention to engage students in issues in a broader, more critical way; reflection pushes students to think in new ways

*Contextualized*: appropriate for the setting and context of a particular service-learning course or program; reflection corresponds in a meaningful way to the topics and experiences that form material for reflection

One way to generate reflection is through student journals. For example, instructors ask students to reflect on fears and concerns about the service assignment; initial reactions to the site, work accomplished, people, and setting; ideas about the causes of the issues they observe at their community site; their source of knowledge about the issues; and connections between course concepts, skills learned, and service activity. Reflection involves more than simply recounting or describing experiences, but should help students connect their experiences to larger issues through critical analysis.

## Assessing Student Learning and Evaluating Service Learning

Assessing student learning gained through a service component of a course may occur through written assignments such as reflective journals, class discussions, and other traditional means of assessing performance. It is important to evaluate and grade the learning outcomes from service experiences rather than the service itself. Some instructors also include an evaluation of student performance on site completed by the community service site supervisor. It is important to include evaluation criteria and assessment methods on course syllabi.

In evaluating the service-learning component of a course, it is important to consider goals for all partners in the service-learning activity: students, institution, and community. Instructors may have their own perspective on how well goals were accomplished but also ask for the feedback of students and community participants as well as suggestions for change.

## Campus Resources Supporting Service Learning

Other university resources may be helpful in locating community sites and in providing additional information about service learning in higher education and at Ohio State. *Campus Collaborative* is an organization of over 40 academic and administrative units at Ohio State. One of the goals of the collaborative is to increase the numbers of instructors, staff, and students engaged in community-based teaching and inquiry. Among other opportunities, Campus Collaborative funds faculty seed grants for community-based teaching and research projects. More information is available on the Campus Collaborative web site (http://www.osu.edu/campuscollab). *Project Community* works with students interested in community service as well as with a number of community service agencies in Columbus. They have a database of community service organizations interested in Ohio State volunteers. More information is available at the Project Community web site (http://www.osu.edu/student-activities/news/projcomm.htm). The *Service-Learning Scholars Roundtable* (SLSR) is a group of instructors who meet monthly to discuss issues involved in service learning as well as share their own experiences with community-based scholarship. A description of SLSR is included in the section on networking in Chapter 9.

# Teaching Large Classes

Teaching large classes is a challenge. A class is "large" whenever a class feels large to the instructor. While a class of more than 60 students is typically considered a large class, to those instructors who normally teach 20 or fewer students, a class of 35 can be large and overwhelming.

In teaching large classes, organization and presentation skills appear to be more in demand than in teaching smaller classes. In her 1993 book, *Tools for Teaching*, consolidating the working experience of many instructors, Barbara Davis has the following special recommendations for managing large classes (pp. 112–115).

## Opening a Lecture

- *Avoid a "cold start."* Arrive at class early and interact with students informally.
- *Minimize nervousness*. Take a deep breath before you begin the class, or tighten and then release your body muscles.
- *Grab students' attention with your opening*. Open the session with a provocative question, startling statement, striking example, unusual analogy, personal anecdote, dramatic contrast, powerful quote, short questionnaire, demonstration, or refer to one of the recent news events. Try to avoid using the same type of opening repeatedly.

- *Announce the objectives for the class*. Tell students what is expected to be accomplished during class and list the agenda on the board. This approach can provide a "road map" to them and help stimulate their interest.

## Capturing Students' Interest

- *During class, think about and watch your audience—the students*. Inclusive and regular eye contact with students will increase students' attentiveness and help the instructor monitor students' reactions to instruction.

- *Vary delivery to keep students' attention*. Instructors can do so by stopping the lecture every 10–15 minutes or so and asking students questions, playing devil's advocate or inviting students to challenge their viewpoints, or having students solve problems.

- *Making the organization of lecture explicit*. Put an outline on the board before lecture to help students focus on the progression of the content.

- *Be conversational*. Use conversational inflections and tones, varying pitches as in ordinary conversation. Choose informal language and try to be natural and direct.

- *Use concrete, simple, colorful language*. Use first-person and second-person pronouns (I, we, you). Avoid using jargon and empty words.

- *Incorporate anecdotes and stories into the lecture*. Use story-telling mode to make the lecture more conversational. Use appropriate anecdotes to illustrate key points.

- *Maintain eye contact with the class*. Look directly at students one at a time to give them a sense that you are speaking to each individual.

- *Use movements to hold students' attention*. Use deliberate, purposeful, and sustained gestures (e.g., holding up an object) to attract students' attention. Avoid nervous foot shifting, and aimless, distracting gestures.

- *Use movements to emphasize an important point or to lead into a new topic*. Use appropriate hand or body movement to capture students' attention and stress an important point.

- *Use facial expression to convey emotions*. Use facial features—eyes, eyebrows, forehead, mouth, and jaw—to convey enthusiasm, conviction, curiosity, and thoughtfulness.

- *Laugh at yourself when you make a mistake*. The instructor's ability to handle an embarrassing situation skillfully will put everyone at ease. Do not let confidence be shaken by minor mistakes.

- *Keep track of time*. Process the content at a pace comfortable for students' cognitive level. If time runs short, do not speed up to cover everything planned. Have some advance plan of what to omit.

# Teaching in Special Settings

Some instructional situations involve, by their very nature, active learning. Examples of such situations include studio, performance areas (perhaps where students are working on a creative project), field studies, or laboratories. Working with students in active teaching situations is especially challenging and an appropriate teacher-student relationship, clearly understood by both parties, becomes particularly necessary.

## Teaching in the Lab

When preparing a lab assignment, instructors might take a moment to view it from a student's perspective. It is important to look for ambiguities and poorly designed procedures that may cause students' misunderstanding and confusion. The best way for instructors to troubleshoot a lab is to do a trial run themselves. It is also very important to have students read through the assignment before coming to lab since time is always tight and they can come prepared to begin. An effective oral presentation might be planned in order to introduce the lab to the students. This brief presentation should include all the information needed to understand and complete the assignment. As the presentation is planned, the instructors might stop and ask themselves whether they would understand if they were the students.

When teaching in a lab setting, some instructors, especially new teachers, have a tendency to stay at the front of the lab, doing nothing unless students approach them with questions. A better strategy is to walk around the lab, check student progress,

talk with them and answer any questions they may have, and provide guidance if deemed necessary. They can be asked about obscure points from the lecture so that the lab instructor will better know if the students understand what they are doing. This way, the instructor can also help students prepare for their examinations.

When offering information, it is important for the lab instructors to be wary of speaking too technically to students, especially if the information is pivotal to the basic understanding and completion of the lab exercise. It is perhaps better to emphasize the basic concepts and gradually introduce the terminology that students should use to discuss those concepts.

Often times, it is a good idea to have students work together, either formally or informally. In this way they can help each other learn the material, share equipment and good preparation, and answer each other's questions. When they are working in groups, lab instructors can check on the progress of each group member, encourage them to participate and make it everyone's responsibility to help other group members understand the material.

Good teachers stay organized and help students be organized too. It is important to know where equipment and reference materials are located, to make careful note of any missing or damaged supplies and equipment and take care of it right away rather than waiting until the next lab. Checking on how students organize their data collection, written work, and drawings helps keep them on track. It is also useful to remind students how much time remains and what needs to be accomplished, and to allow for clean-up time. Safety rules should be established and the instructor should make sure that students follow all the safety rules and guidelines.

## Teaching in the Studio

Studio situations present their unique challenges to teaching. Often, especially in performance areas, personal judgment becomes significant and the instructor has some methodological and philosophical questions to answer before the course begins. For example, criteria for assessment of learning take on particular importance when a teacher must consider whether a talented student who makes little effort will be judged in the same way as a less talented student who works very hard to achieve the same level of performance (for a discussion on the problems on performance evaluation, see Chapter 7 on Assessment). Although much will vary depending on the instructional situation, the following guidelines may help:

- Performance classes need to be planned carefully. The instructor needs to determine in advance and clearly communicate to students how the importance of such issues as talent, level of achievement, attitude, effort, and attendance will be viewed. One major dilemma is the relative importance of process and product in the course. Will the instructor feel that students have achieved the course goals if they demonstrate excellence throughout the process, but their final performance does not to the same extent? Does the instructor care only about the quality of the art work produced, or is he or she equally (or more) interested in how the accomplishment was achieved? Such issues require serious consideration while the syllabus is being developed. Whatever the decision, the instructor has to make sure all students have an attainable goal for the course, regardless of how much talent or inherent ability they may have.

- The instructor needs to determine ways in which the learning process can be measured, both for evaluation and improvement, and build this into the course. Other than personal observation and assistance, dancers or actors might be required to keep a rehearsal log, or artists may be asked to keep a journal listing the dates and reasons for major breakthroughs in the project. Instructors might give quizzes on readings or require students to turn in rough drafts, plans, or outlines as ways of documenting process.

- When giving feedback, it is important for the instructor to do so constructively and sensitively (this is particularly important when a student may have a large emotional investment in a creative project). It is imperative to limit criticisms to aspects that students can do something about (this restriction may require more conscious effort than the instructor expects) and to help them overcome the barriers that only appear insurmountable.

- Instructors can work on recognizing potential. Some students will be obviously talented in the studio area; others will have abilities that have not yet surfaced. It is the teacher's job to pull that talent out into the open and refrain from

making snap judgments.

- It is quite easy in performance areas for a teacher to take on the role of a parent. While nurturing students is obviously important, it is equally important not to be patronizing about their achievements. Similarly, although students may be fellow artists at a difficult point in their careers, it is crucial to retain as much neutrality as possible when it comes to their performances and not become too emotionally or personally invested in their creative growth.

## Working with Students in the Field

When students are working in the field (e.g., in service learning situations, internships, or field work for anthropology students), the course instructor is likely to see them less frequently than in the regular setting. In such a case, it becomes crucial for the course instructor to keep adequate communication with the person who will work closely with students and will supervise their activity during the field trip. Selection of this person needs to be made with careful thought. It is important to enlist his or her supervising experience, clarify his or her responsibilities, and to establish effective lines of communication before students are sent out to the field. Furthermore, the field learning experience should be in compliance with the course objectives, the present level of student's ability, and methods of evaluation to be employed.

Once again, it is particularly important to communicate course objectives and methods of evaluation to students. It is good to let them know how often the course instructor will visit the site, talk to students, and what will be looked after. The field supervisor who works with students on a daily basis is, of course, an appropriate person to offer help, advice, and evaluative input.

Students with serious problems and concerns should know that they can contact the course instructor at any time without the contact being taken as a signal of failing. It is also appropriate for the instructor to initiate some contact with students in the field from time to time. Doing so could diminish the sense of isolation that students may feel.

If the aim of a field visit by the instructor is to watch students in action, the instructor may try to minimize the effect of his or her presence. Inevitably, in the presence of the instructor students will become more nervous and therefore not perform at the normal level. Other people who participate in the experience may also change their normal behavior. Therefore, it is a good idea for instructors to let students know that they understand such a possible situation exists and will try to minimize the impact. For instance, if the students are in the field for an extended period, there will be multiple visits by the instructor so that students will become used to his or her presence and perform normally. Instructors also need to be wary of creating an uncomfortable environment unintentionally. For example, two evaluators talking extensively to each other during the field exercise can be extremely distracting to everyone who is participating. Similarly, there is a danger of undermining the authority of the persons working in the field (once that has been destroyed, it is often impossible to recover). Criticisms, for the most part, are best delivered away from the field environment.

# Teaching One-on-One

Occasionally, students will need more attention than the instructor can provide in the classroom. Working individually with them during office hours can be a source of satisfaction to both the student and teacher. It is a good idea to begin such interactions by getting to know the student through an informal conversation.

Determining what problem the student is having is sometimes challenging. If the student's problems are general—she dislikes the textbook, he is overwhelmed by the lecture material, she panics when given a test, he is not comfortable with the format for written assignments, she has never used a computer, he has never been in a chemistry lab before—you can provide general advice on study skills, lab methods, or campus survival techniques.

Most student problems will center on course content. Helping the student break the problem into a series of small, easily solved steps will generally be more effective than trying to get the student to make a giant intellectual leap. Instructors should avoid simply providing the student with the answer or explaining the entire process or concept followed by a statement such as, "See, it's really simple, do you understand it now?" Instructors can help students with the process of learning by implementing the following suggestions.

*Request that students state the question, process, or problem in their own words and asking for other examples or applications.* Instructors can try to determine what the student already understands and how she or he learned that. This knowledge can be used as the basis for dealing with problematic material. Personalizing the material—helping students understand how specific knowledge is useful in non-academic settings—can increase students' motivation and may also reveal that they already understand more than they thought they did.

*Help the student apply general concepts and techniques to the specific problem.* For example, if the student can solve simple equations, the instructor can help break down the complex equations that are causing problems into a series of smaller, more familiar, equations. If the student understands the meaning of the novel or picture but is having trouble making a coherent argument, instructors can help the student list his or her points and then determine the best way to arrange them into an essay. If the student can perform the experiment correctly but does not understand its significance, instructors can help the student relate the physical changes observed in the lab to the theoretical material in the textbook or lecture notes. If the student understands the lecture material but is baffled by the text, they can be asked to "translate" the reading material into everyday English.

*Encourage students to state in their own words how the concepts and techniques provide the solution to the problem.* Students often have difficulty moving from general knowledge to specific situations and from specific situations to general principles. Usually the problem is lack of practice; often it is lack of familiarity with the discipline's specialized vocabulary. It is important that instructors carefully explain any unusual words. Once students are able to explain a process in their own words, they can be helped to "translate" their answer into academic language. Students who know how to put their own ideas into academic language may have an easier time "unraveling" the next problem they encounter.

*Give students a similar problem requiring the same concept or technique for its solution and encouraging them to practice other similar problems.* The goal is to avoid having students successfully solve one problem only to go home and discover that they have not mastered the material sufficiently to work on their own. Experiences like this can cause students to lose faith in their instructor's ability to teach and their ability to learn.

Throughout this process, it is important to keep in mind that a positive approach will help the student learn. Treating students with respect, acknowledging what they already know, focusing on their ability to learn more, and praising them for each advance they make are keys to advancing their learning.

Tutoring provides an exciting opportunity to assist each student in the learning process. Many students are unsure of their ability to do academic work. They may view academic work as mysterious and difficult. It is important to accept this feeling and demonstrate in interactions with students that what they are learning will be useful to them. Leaving each student who comes for extra help with some feeling of mastery, however large or small, can have lasting effects.

If the students' problems seem too large for instructors to deal with or if they are personal in nature, it is best to make a referral. There are many support services for learning on the Ohio State campus. Some serve the entire student population, such as the Academic Learning Lab (688-4011) and the University Writing Center (292-5607). Some are more specific, such as the Student Athlete Support Services Office (292-7088), the Office for Disability Services (292-3307), or the Office of Minority Affairs Tutoring Program (292-0964). These programs offer services to help students improve study and writing skills, assist them with learning disabilities or psychological anxieties connected with learning, and provide tutoring in specific subject areas. Instructors should follow up on a referral by asking students whether the services helped. This shows that they continue to be interested in the students and also gain information on the services that may help them advise future students. A directory of these programs and their full contact information can be found in the Appendix at the end of this handbook.

While many university instructors teach only in the way in which they were taught, there exists a wide array of pedagogies with which to engage students. Some disciplines or areas of content seem to fit a specific mode more easily than others. However, it is important to remember that students vary in terms of both the learning styles that they prefer and the range of learning strategies they command. Therefore, it is important to vary the modes of

teaching to allow different students a way of connecting to the material, as well as to teach new learning strategies explicitly to expand students' repertoire. This chapter provides a basic overview of some of the available teaching techniques; FTAD has many resources on these and other techniques available to help instructors broaden their own set of teaching tools.

## Recommended Readings on Modes of Teaching

Items preceded with an asterisk (*) can be found in the FTAD resource suite.

*Davis, B. G. (1993). *Tools for teaching*. Jossey-Bass.

*McKeachie, W. J. (1999). *Teaching tips: Strategies, research, and theory for college and university teachers*. Boston: Houghton Mifflin.

Visit the FTAD web site or library for many other works on specific modes of teaching.

# 6: Incorporating Instructional Technology

Instructional technology is an integral component of modern university teaching. It is most beneficial when it is closely aligned with the teacher's instructional objectives. The objectives should determine the choice of media, not the other way around. Although instructional technology may seem, and often is, an effective way to present instructional materials, these materials are only as good as the thought and organization that precede their use. Used effectively, instructional technology can help emphasize important concepts within teaching, stimulate student interest, enhance comprehension, and prevent boredom (Williamson & Abraham, 1995; Hall, 1996). In this chapter, we will discuss the effective use of several instructional media commonly used in the college classrooms.

## Benefits and Applications

Instructional technology permits the addition of visuals, sound, and motion to information display and can be an effective means of enhancing teaching and learning. Used appropriately and effectively, instructional technology can help instructors in the following ways (Albright and Graf, 1992):

- to perform tasks that cannot be done otherwise, such as helping students experience times, places, people, images, and events that cannot otherwise be reproduced and brought into class
- to perform tasks that instructors can do otherwise, but in a less effective way (e.g., helping students visualize phenomena that may be too small or too dynamic to convey effectively in print or with static models or by gestures)
- to perform tasks that are routine, e.g., helping students overcome learning differences and/or deficiencies best remedied through drill and practice
- to better prepare students for real-world situations in which they may be asked to use such tools as spreadsheets, word processing software, databases, or presentation templates to present ideas and processes by giving them projects which teach and exercise these skills
- to increase student and instructor productivity by reducing the time otherwise spent on routine record-keeping or communication between instructors and students
- to reach out to students who are otherwise unable or choose not to attend the conventional on-campus classes

Following are some general strategies on how to use instructional technology, contributed by the Center for Teaching and Learning at University of North Carolina–Chapel Hill (1993):

*Relate media to learning objectives*. Instructors should know clearly and make it clear to students why instructional media, such a videotape or a PowerPoint presentation, are used in class and how students are expected to refer to them in the process.

*Present main ideas in a simple format*. The rule of thumb here is that media should support presentations by emphasizing the main points, using simple and user-friendly layout and wording, and breaking complex concepts into manageable pieces.

*Support main ideas*. The media should not overpower or overshadow the presentation, but instead support it. By this principle, instructors should choose the visuals carefully and try to ensure that each image they use contributes something significant to student understanding of the major concepts. Also, it is a good idea to provide breaks for discussions or other activities between media viewing sessions to help reduce "media fatigue."

*Match media to level of instruction*. It is important to keep in mind that instructional media to be used in a class should be appropriate to students' needs, level of expertise, and knowledge base of the subject matter. It will be less effective or will even diminish the supporting function if such media

turn out to become overwhelming to students, for instance, showing 50 highly abstract and intensive PowerPoint slides in a 48-minute session, or having students watch a documentary for the entire session.

Good instructional technology applications, like good lectures, are notorious for the amount of initial preparation time they swallow up. However, once one has developed instructional technology applications, they often can be used over again and are easily updated.

# Modes of Technology

In this section, we will discuss some commonly used instructional media in the college classrooms, with a focus on the pros and cons of using them, and offer working tips for using them effectively.

## Chalkboards and Dry Erase Boards

The chalkboard is probably the most widely and long used instructional technique in the college classroom. It is recognized by teachers across fields for the following functions (Davis, 1993):

- outlining the session's agenda
- listing major points of a lecture
- summarizing or presenting ideas raised during class discussion
- spelling out difficult names, unfamiliar vocabulary, and new terminology
- presenting diagrams, graphs, and time lines
- showing formulas, computations, or steps in a procedure

When using the chalkboard on a regular basis in teaching, instructors may take the following concerns into consideration to ensure effectiveness.

When planning the lesson, instructors might include a *board plan* that determines which aspects of the lesson will be illustrated on the chalkboard. They may also map out plans for the board display before class.

Effective teachers write neatly and clearly, making sure the handwriting is large enough and legible for students to read. It is useful to look critically at what is on the chalkboard from the students' perspectives. Scrawling or excessive, incomprehensible abbreviations tend to be especially problematic. Also, instructor's reading aloud while writing on the board will help students keep up with taking notes.

It is important to remember that unless the classroom is sloped, students seated toward the back of the room will not be able to see the bottom of the board. If the instructor sits briefly in the back row of the occupied classroom, it will be evident how large and how far down the board to write. It is a good idea to mark this point with a piece of chalk. Also, it is advisable to check for any intervening obstacles (such as an overhead projector, lectern, tables, etc.) that may prevent students from seeing the board. To keep the board visible for the longest possible time, instructors who are left-handed can fill the right panel first; those who are right-handed can fill the left panel first.

It is helpful to keep in mind that the board is best used for displaying essential information and key concepts, not for displaying large amounts of written information (which should be reserved for preprinted overheads or, even better, handouts). In addition, reducing the time writing on board will increase the time for the instructor to face students and interact with them. With a little practice, instructors can learn to write while partially facing the class. This is an especially important skill, as one loses approximately 40% of vocal volume when facing away from the class.

Holding the chalk at a 45-degree angle to the board will help avoid squeaking. Breaking the chalk in half and using a fresh end will also help eliminate squeaking.

If a section needs to be erased to make room for new text, allow students time to copy down the content before the old content is erased and inform them before beginning to erase. In addition, instructors should consider holding the discussion until after most students finish note taking, since it is difficult for them to think while copying from the board. They need time to catch up before the beginning of a discussion.

It is advisable to bring one's own chalk and to carry plenty of spare pieces (the same is true of dry erase markers). Colored chalk is useful to highlight important aspects of the lesson. Make sure to ask students if the color is legible; not all chalk colors are compatible with all board colors.

## Overhead Projectors

The overhead projector is a versatile tool that can be used in either normal or dimmed lighting. When used simply with a marker and a blank

transparency, a projector serves some of the same functions as a chalkboard, but with several advantages. An overhead can adequately project in large classrooms. Like a chalkboard, it can be used to record student responses to an open question as a way of focusing the discussion, but as an added feature, a transparency allows you to save such responses, either for your own use or to display again in a later class period. It also allows you to face the students while presenting the content.

Perhaps the real advantage of overheads, however, is the ability to prepare transparencies in advance. With computers and laser printers and software such as PowerPoint (which comes with ready-to-use templates), it is easy to produce quality transparencies that can display more than just text. Davis (1993) suggests that overheads can be used to present the day's outline; difficult names or terminology; diagrams, charts, maps, graphs, drawings, or other illustrations; chronologies of important dates; formulas, theorems, computations, or steps in mathematical proofs; and major points of lecture. Cartoons are an excellent way of simplifying complex ideas and adding humor. With a little effort, spatial, statistical, and structural relationships can all be visualized on an overhead. Overlaying several transparencies allows you to illustrate changes, processes, or alternatives.

With all these possibilities, the temptation is to put too much on the overhead, so it is important to limit the amount of information on each page. Overheads are not a good means, for example, of displaying an entire page of a book. Use at least an 18-point font size and plenty of white space to make your transparency less cluttered and easy to read. An instructor should keep in mind visibility from the back row, since students often will not speak up to say that type is too small. Highlighted outlines with clearly defined headings work particularly well, and color can be used to create emphasis.

During presentation, it is particularly helpful if the instructor covers up the sections that are yet to be introduced and displays only the content being discussed. This technique, called *progressive disclosure*, can help students follow the instructor's train of thought, concentrate on what is being discussed, and avoid becoming distracted. For similar reasons, it is best to turn off the projector altogether when it is not being used or directly referred to.

Instructors should also be aware that standing in front of the screen may block students' view and thus work against one of the advantages of the technology, i.e., the ability of the instructor to face the class when writing and pointing to the text material. Therefore, it is very helpful to stand to the side during the presentation.

Some Ohio State instructors have offered these additional tips for using overhead projectors:

- Know how to replace an overhead bulb and where to get a replacement.
- Keep extra overhead pens handy.
- Use no more than 10-12 transparencies in a 50-minute lecture class.
- Wait briefly before speaking after you put up a new transparency.

## Films and Videotapes in the Classroom

Films and videotapes can lend themselves to classroom use very well because they can provide a bridge between the abstract concepts and real-world or concrete images. For example, in an English class on Shakespeare's dramas, an instructor can show students the video of a Shakespeare play. A political science class on 20th-century American politics may show a documentary of a historical political movement and speeches by its leading figures. A chemistry class can present a videotape of an important but dangerous or expensive experiment. In a communications class, the students can tape themselves during a problem-solving session so that later they can analyze the group process that occurred. To use videos effectively in teaching and facilitate student learning, instructors may take the following recommendations by Davis (1993) into consideration.

- It is always good to prepare students to see a film or videotape. Instructors should tell students why they want to show the film or video to the class, what issues students should concentrate on, and how the film/video is tied into what the class is studying. It also works well for the instructor to give students some specific questions to think about and prepare to discuss before or after the film or video presentation.
- Instructors can help students view the film/

video presentation critically and thoughtfully and understand better by providing some context or background information, stopping at certain junctures and engaging them in in-depth discussions. In this sense, it is most helpful if the instructor reviews the presentation in advance and determines how much of the film/video should be shown, where to stop and engage students in discussions, and what questions should be asked. It is useful to provide an outline of a video's main points on the overhead projector, chalkboard, or in a handout, so that students know what to be looking for as they watch the presentation.

The following are additional tips on using films and videos in teaching, shared by Ohio State instructors:

- Practice using the equipment and become very familiar and comfortable with it beforehand.
- Watch the tape before showing it to the class.
- Explain to students in advance your reasons for showing the film or video and tell students how you expect them to process the information during and after the film/video presentation.
- Show the shortest clip necessary to illustrate the concept.
- Tell students whether you expect them to take notes.
- Consider including one or more specific questions about the video or film on your exam to add legitimacy to its showing.
- Interrupt the presentation as needed to clarify points, but not too often.
- Have a follow-up activity prepared (e.g., follow-up classroom discussions, short essay, reflection paper, or critique of the film or video). Students tend to be more motivated and attentive if they know they are expected to process the information seriously.

## Slides

Using slides to present information during class offers several distinct advantages, including the ability to project photographs of geological formations, human beings, animals and plants, works of art, historical artifacts, architectural drawings and structures, botanical specimens, or microorganisms. Slides can also show text, graphs, or diagrams. Slides are particularly effective for the following features (Fuhrmann and Grasha, 1983):

- showing specific examples
- enhancing students' memory
- demonstrating detailed steps of a process
- showing spatial or visual relationships
- providing illustrations of difficult or complex theories or concepts

To achieve the desired results in using slides in teaching, instructors may find the following recommendation by Davis (1993) useful:

- Use slides to emphasize the structure of the presentation. Instructors can show a title or signature slide at the beginning of each topic presentation, use slides to reinforce the key concepts being discussed, or use a slide to demonstrate or illustrate each point being made.
- Use horizontal instead of vertical slides. Most screens are designed to show horizontal slides. Vertical slides tend to project past the top and bottom edges of the screen.
- Arrange for a small light to illuminate your notes. Since the classroom lights need to be dimmed during a slide presentation for better image presentation, it is advisable to check whether the podium has a small reading light built into it. If not, consider bringing a small flashlight.
- Make certain that the slide being projected corresponds to what you are saying at the moment. Otherwise, students can become confused and frustrated.
- Keep a slide on the screen for no more 10 to 15 seconds. Research findings indicate that when a new slide is displayed on the screen, most viewers spend no more than 15 seconds actively exploring it before starting to lose interest. Also, it is a good idea not to leave a slide continuously on display after discussing it.
- Spur students' active viewing skills by occasionally describing the next slide before it is on display. The underlying reasoning is that by describing the slide content before its display, it allows students to mentally process and imagine what is coming. The slide will either reinforce or correct their anticipation. Such compare-

and-contrast exercise tends to enhance student comprehension.

- Keep in mind that students may not be able to take notes during slide presentation. Given that the room lighting will be dimmed during the slide show and students will concentrate on viewing the slides, it is helpful for the instructor to keep these factors in mind and accommodate students' needs by providing a handout with the highlights of the slide presentation or allocating time afterwards to present the key information of the presentation and allow students to take notes.

- Place the slides in the carousel tray and test the slide projector beforehand. It is always helpful for the instructor to lay out slides in order, put them into the projector's carousel tray, and test them before class to ensure smooth operation in the anticipated sequence.

Some Ohio State instructors have also contributed the following tips:

- Presentation software allows for rearranging the sequence of slides and easy copying of a slide. If a slide needs to be shown more than once during a presentation, it is best to use copies rather than moving the projection sequence backwards through several slides.

- Since the room has to be darkened in order for students to see the presentation clearly, students may need small ceiling lights in order to take notes. It is helpful if lighting arrangements are worked out in advance. As mentioned above, providing handouts of the presentation is particularly beneficial for the students and is easily done with most software programs.

- The use of laser or light pointers is helpful to highlight particular features of slides. These pointers are more effective than a hand gesture or a manual pointer since they are more visible.

- Wireless remote controls allow the instructor to move about the room and check on the focus and visibility of the slides from the students' perspective.

- Newer projectors automatically end presentations with a dark screen. Older projectors need to have a blank dark slide placed at the end in order to eliminate the blinding white projector light at the end of a slide series. Newer projectors also have less fan noise, but this feature also correlates with less air circulation and more projector heat, so that the use of the older style glass-mounted slides in new projectors should be avoided.

- Slides are an inexpensive way to add visual reference to a lecture and spice to the subject matter.

## PowerPoint and Other Presentation Software

Computers can be used to incorporate various types of media into a single presentation for classroom use. Software programs can blend text, diagrams, animation, and recordings of audio and video to enhance classroom lectures and initiate discussion. Presentation software programs, especially PowerPoint, have been gaining in popularity among college instructors. If a presentation contains several photographs and/or video sequences, a high capacity disk may be necessary, such as a 100-megabyte disk to be used with a Zip drive or a one-gigabyte disk to be used with a Jaz drive. Fortunately, these small, light-weight drives are portable and can easily be connected to a computer in a classroom if they are not already installed.

Using a computer and an LCD panel in presentations has much in common with using slides and transparencies. The LCD may be placed on an overhead projector and displayed on a large screen. The major disadvantage is that most systems require that the room lights be darkened when presentations are projected. Another disadvantage is that the creation of multimedia presentations can be quite time-consuming. Consideration should be given to choosing the most appropriate media for the content to be taught. Special effects, such as animation and word fade, should be used for emphasis to enhance a lecture, not as gimmicks.

According to Lee and Patterson (1997), some most commonly used and appreciated PowerPoint features include:

- pre-made graphic and slide templates
- color capacities
- built-in horizontal slide format for use in classroom presentation or distance learning
- simple word-processing tools
- graphic and high-quality clip art

- drawing tools
- on-screen, computer-generated slideshow capacities, complete with animated text, screen-to-screen transitions, and the progressive-disclosure feature
- easy transfer of computer-generated slides to 35mm color slides or transparencies
- cut-and-paste capacity from other Microsoft applications
- capacities for importing ASCII texts, sounds, digital video, and digitized images

PowerPoint can be used to prepare and present professional-looking presentations, lecture notes, and student handouts simultaneously. It is easy to create, store, update, edit, combine, and cut and paste PowerPoint files. Technical layout is simple but information rich, with multiple colors. PowerPoint can integrate image, text, sound, and motion all in one single delivery system. As a user-friendly presentation mechanism, it helps eliminate the need to juggle different pieces of equipment, such as the blackboard, overhead projectors, slide projectors, and VCR. In general, it can help the instructor be better organized.

One attraction of PowerPoint is that, if used appropriately, it can serve the needs of students cognitively and pedagogically. By using PowerPoint, the instructor can emphasize major concepts and reinforce them through special layout (e.g., hierarchical structure, different font sizes, color coding, progressive disclosure, and highlighting the currently discussed issue and dimming the previously discussed ones). With these special features, it can also help maintain students' interest and attention.

However, the experiences of instructors and students in PowerPoint-facilitated classes have found that, if not used appropriately, PowerPoint can backfire and have a negative impact on learning. One typical example is that instructors tend to pace faster in PowerPoint presentations and tend to pack in too much information. It is not unusual for an instructor to use more than 30 slides in a one-hour class. As a result, students become overwhelmed and frustrated, and develop negative feelings towards PowerPoint presentation. By the same token, in classes using PowerPoint, students also have a tendency to become passive listeners instead of active participants.

To avoid the pitfall of using PowerPoint inappropriately, instructors using or considering it may take the following recommendations into consideration in the planning and delivery of a PowerPoint presentation:

- Visual aids should augment the presentation. They are not meant to *be* the presentation.
- Balance the PowerPoint presentation with adequate amount of information and number of slides to be shown to students. Ideally, in a 50-minute class, the number of slides to be shown should be no more than 15.
- Pace adequately during the presentation and closely monitor students to make sure they are following your instruction instead of being lost. In addition, as in an overhead presentation, it is quite desirable for the instructor to stop after presenting each topic, invite student questions and comments, and/or engage them in applying basic concepts to real-life situations before moving on to the next topic. By doing so, it also helps reduce the media fatigue which a PowerPoint presentation may cause.
- It is very helpful to provide students with handouts in a PowerPoint presentation. In this way, students do not have to spend time copying the slides, and instead can pay attention to the instructor and remain actively engaged in processing the information. With the handouts, they can jot down additional information coming out of the presentation or contributions by the classmates during discussions.
- Always have a Plan B, such as a back-up set of transparencies in case equipment breaks down or is not available.

Barlett and Wilson (1998) have further suggestions for instructors who are beginning to use PowerPoint in teaching:

- Keep it simple. PowerPoint has multiple features. But it takes time to learn them all. Start with the basic features and create the basic presentation outline. Update, fine tune, and embellish later.
- Design materials and exams in such a way that students cannot just memorize the notes and ignore the textbook and additional information presented in the lecture. Complete lecture notes tend to encourage a minimalist mode in students. To avoid such a pitfall, leave out occasional words and include some unanswered

questions, so that students have to attend class and fill in the blanks.

- Test the projection equipment in the classroom beforehand. Sit in the back row of the classroom and review the presentation. Adjust font sizes and colors, experiment with the lighting, and move the projector around until the best projection image is achieved.
- It is imperative that all of the instructional media are previewed before they are used in class. This will familiarize the instructor with content and structure, as well as ensuring that no unfortunate (and sometimes embarrassing) mix-ups have occurred.
- Visuals are best kept simple, with minimal wording. They should always be readable from a distance (when reproducing from texts, one should enlarge graphics and/or printing). The instructor can practice using the visual aids in the actual classroom before the course starts.
- Be flexible and do not let some technical problems and difficulties overcome you. Lost cords, burned-out bulbs, and computer malfunctions will be hard to avoid. Be prepared and take chalk and notes to class each time.

Holzl (1997) has additional tips for developing effective PowerPoint presentations, such as:

- Develop a visual storyboard for your presentation that is displayed prominently.
- Pre-select a standard sans serif font in an appropriate size for clarity and readability. For maximum presentation effect, choose predominantly lower case letters.
- Identify the version of PowerPoint available in the classroom where you are presenting, and discuss your needs with the technical support staff.

## Computers to Enhance Learning Outside the Classroom

Computers and software are powerful tools that can facilitate student learning and allow students to prioritize their own unique learning experiences. Many existing software programs are available for students to use for mathematical computations, statistical analyses, graphic design, publications, portfolios, and writing projects. Interactive programs can engage students in their own learning. Tutorials and simulations allow individual students to learn new material at their own pace. Students can benefit from browsing and searching software in a non-linear framework to identify content areas in which they might need further instruction. These programs can be made available online to students. As the Internet continues to grow, students have increasing access to timely information. These resources can be adapted to the various needs of the students while stimulating them to participate actively in their education. Sometimes introverted students or students who prefer to think for a while before responding to a question might find that contributing to an electronic mail dialogue is easier than in-class discussion. Learning outside the classroom will play an even more important role than ever before as the capabilities of computer technology are incorporated into existing course formats.

Computers can also be used to administer tests, either for student self-assessment or as part of a course grade. Multiple-choice tests are particularly suitable for computers. Students can find out their scores immediately upon completion. Tests can be written that allow the student to know which questions were correctly answered and which were incorrectly answered. Several different testing formats are available. One format allows students to answer questions only in a set sequential order, while another format allows students to return to questions that they did not answer the first time through the test. There are also specialized test-bank software programs that walk the instructor through test design by the selection of the number of questions desired per category. Tests with increasing levels of difficulty can be designed to allow high performing students a shortened test version based on their answering the increasingly more difficult questions correctly. Using a computer gives the instructor not only immediate scoring, but also an item analysis that is tedious work when done manually. Additionally, computer-administered testing minimizes cheating by students

## Computers for Course Communication

Using computers for communication minimizes the usual restraints of time and location. Computers allow students to have greater access to instructors, while instructors can give students more individualized attention. Class communication can

occur via e-mail by using computer labs located on campus or from home with HomeNet software (available through OIT, see Appendix). Students can submit assignments in the body of an e-mail or as an attachment. Instructors may quickly reply with specific comments and recommendations for improvement and give students an opportunity to submit a more polished final work. Holding class discussions by e-mail provides opportunities for all students to participate, even those who usually do not feel comfortable with speaking out in class. Instructors can easily communicate with an entire class by creating a nickname with all the e-mail addresses or by establishing a course computer account through OIT. E-mail can increase student-student interactions and student-instructor interactions.

Incorporating electronic communication technology into a course requires thoughtful planning. There are several things to keep in mind that could help this planning process (Creed, 1997):

- Communicating by computer should be based on students' needs and on what facilitates their learning.
- Instructors should be proficient with techniques before assigning tasks to their students.
- Many students need instruction in computer technology and may become frustrated at having to learn electronic communication on top of the course material. Students need to feel encouraged and supported in their struggles.
- Not all students have access to computers where they live and must rely on campus computer labs. The scheduling of assignments should give all students time to respond.
- There are limitations inherent with the QWERTY keyboard which affects some disciplines. For example, several foreign languages do not share the same alphabet that is used in most text-based programs. Also, many chemical structures need special programs to be displayed. Most of these limitations are surmountable but require advance planning. For field-specific problems, technophile colleagues at Ohio State or at other institutions are usually very happy to help.
- Technology does not always work as planned. Knowing whom to consult and having a contingency plan can save the day.

Instructors who will be using e-mail in their course should emphasize this in their syllabus so that all students have active accounts and know how to use them prior to the first mailing. Some students will not have had previous e-mail experience, so instructors should be prepared to provide technical support and encouragement. Instructors should also identify the frequency with which they expect students to check their e-mail (every day, every day that class meets, every Monday, etc.) and the amount of time students have to respond.

## The World Wide Web in Teaching and Learning

As computer technology becomes more sophisticated, "virtual" media are becoming more valuable and widespread in educational settings. One such medium is the World Wide Web, which is increasingly being used as an instructional tool and has proved to have great potential in reshaping teaching and learning.

The web can be used to establish a course home page to fulfill technical and administrative purposes. Administratively, instructors can use the web site to make available such course information as the syllabus, readings, class notes, handouts, online discussion, and assignments. Students enrolled in the class can have easy access to such information at their convenience. They can also submit their homework assignments online.

Pedagogically, instructors can develop assignments to have students use the Internet as a resource in their learning. Students can visit designated web sites or can search for pertinent sites and report their findings to the instructor. Or, they may be given an assignment to join an online discussion group appropriate to the subject matter. Students may find it valuable to download information, both text and graphics, and create a reference file. Because of ease of access, 24-hour availability, and the vast amount of information, students may be more motivated to explore web sites than to visit a local library. Usually, resources on the Internet are more up-to-date than material in textbooks, but URLs (web addresses) given on the syllabus need to be verified periodically for validity. Instructors must show students how to cite Internet sources in reports and projects and must also discuss the quality and accuracy of information on the web.

One feature of the web that has been particularly appreciated by both instructors and students is the

online discussion. Identified benefits include the following (Merry Merryfield, OSU faculty, 2001):

- The substantive quality of the discussion increases for the most part when it goes online.
- Online discussions can be organized to promote educational equity.
- Students marginalized in large class discussions (because of their language, their "differences," their shyness or reticence, their learning styles, etc.) usually benefit when discussion goes online.
- When interacting online as opposed to face-to-face, students are much more likely to engage people whom they perceive as "different" from themselves.

On the other hand, instructors should be clearly aware that online discussions benefit mainly people who are comfortable with online technologies and the process of reading and writing on the computer. For those who are not comfortable with computer technologies and the lack of face-to-face interaction, or those who do not have easy access to computers, they may feel that online discussions are a burden, unfair, or inappropriate. Therefore, to reach out to all students, instructors need to keep a balance and incorporate multiple teaching techniques in web-enhanced courses so that all students will thrive.

## Preparing to Teach Web-Enhanced Courses

Some instructors are teaching one or more web-enhanced courses right now. Others may be planning to do so in the near future. Either way, as in the case of using any other instructional technique in teaching, instructors need to consider many issues in the planning and implementation of web-enhanced courses both technically and pedagogically in order to reach the desired learning outcome. The key is to make sure that pedagogy comes before technology, not the other way around. This checklist may assist instructors in organizing their thoughts on dealing with some specific pedagogical issues related to teaching web-enhanced courses.

Decide how you will use instructional technology to enhance teaching and learning by asking the following questions:

- In a web-enhanced course, which component(s) of your current teaching do you plan to present online? Which components will you keep presenting in the traditional way, i.e., through face-to-face classroom interaction? For what reasons?
- In what ways do you think such changes will improve your teaching and enhance student learning?
- What expectations do you have for students in taking this web-enhanced course?
- How will you explain to students the purposes of using web-enhanced teaching to help them learn more effectively?
- What student attitudes toward and expectations of technology may affect their motivation and performance? What will you do to take these into account?

Pay attention to the changes in student experience, from face-to-face to mediated:

- How will you prepare students to move from a synchronic, fixed time frame of class time to a more or less asynchronic, more flexible time frame online?
- How will you prepare students with different personalities and learning styles to carry out some assignments partially in class and partially online, or completely online?
- How do you plan to monitor and mediate student discussions or other group activities online? How will you keep track of each student's contributions and build them into your grading system?

Clarify similarities and differences between web-enhanced courses and distance learning:

- What are some major similarities between the two formats and teaching approaches?
- What are some major differences between the two approaches?
- How will such similarities and difference be reflected in your syllabus, course design and delivery, and your interaction with students?

Explain time commitment and instructor learning curve:

- Given the limited amount of time you can spend on online course development and your speed to learn new instructional technology, realistically, do you plan to put your entire course content online the first time you teach it, or phase in the process?
- What changes will you make when you teach the course for the second or third time?
- What are some of the main reasons for taking the approach you have chosen?

Consider instructor availability and student accessibility:

- With the new web-enhanced format, what kinds of adjustments will you make in terms of your office hours and general accessibility to students? Will it be virtual office hours only, conventional, or combination of both?
- With e-mail and web chat room features incorporated in your communication style, how available will you make yourself to students?
- What are your students' expectations for this (response time, etc.)? How will you find out and help them develop realistic expectations?

Assess the need to build in interactivity and active learning:

- With more of the course being put online, what teaching approaches will you adopt to make the class interactive between you and students and among students?
- How will you present the content so that students will be actively engaged instead of falling into some form of "spoon-feeding" or "information overload"?

Monitor changes in group dynamics and influence of learning styles:

- With some learning activities going online, what kinds of changes in group dynamics should you expect to take place between you and students and among students? How will you prepare for such changes as a teacher? How will you help students prepare for such changes?
- Students with different learning styles and preferences will be affected by such changes. How will you accommodate such changes so that every student will feel included and connected to you as well as to fellow students? How will you work with those students who prefer conventional format?

Prepare students to learn in the new, mediated learning environments:

- With students coming to the class with different levels of computer knowledge, proficiency, and access, what can you do to help them all prepare for the course?
- Pedagogically, what do you need to do to help students catch up and be comfortable with the new mediated learning environment?

Assess and evaluate teaching and learning:

- What types of needs assessments do you need to conduct among students before or at the beginning of the course?
- What types of feedback (formative evaluation) on teaching and learning do you plan to solicit during the course to determine how class is going and diagnose any problems?
- How will you evaluate student learning in this web-enhanced course: conventionally, virtually, or a combination of the two? Pencil-and-paper tests, projects, term papers, or a combination?
- How will you assure that you are testing what you really want them to learn and not what is easy to test?

This list of questions is perhaps overwhelming and the answers are still being actively debated and researched. Faculty and TA Development has materials available and regularly organizes round table discussions of such issues. FTAD can be contacted for more information.

## Technology Training and Support

Instructors at Ohio State have a wide array of technologies and technical support at their disposal. Most of these are coordinated through the Office of Information Technology (OIT). See the directory in the Appendix for contact information and hours of operation for these services.

## Office of Technology Enhanced Learning and Research (TELR)

The mission of the Office of Technology Enhanced Learning and Research (TELR) is threefold:

- to support instructors as they incorporate technology into their teaching
- to support students as they incorporate technology into their learning
- to form internal and external partnerships to build a sound technology infrastructure and to use it well

Online instruction is becoming an increasingly important part of the educational experience. True online courses are defined as those that either do not require the student to appear on the local campus at all or that may require a limited number of visits, typically for testing purposes. This means students can stay at home and still fully participate in studies at OSU. TELR supports WebCT as a tool for developing distance education courses. The TELR group also tracks the use of instructional technology on campus, brings practitioners together to share successful projects that can serve as models, and coordinates administration of the Grants program. More information can be found on the OIT web site (http://www.telr.ohio-state.edu/about/index.html).

### About WebCT

WebCT is an integrated set of web course tools that can be used to supplement a class taught mostly face-to-face or can be used to teach a course entirely at a distance (where students mostly "go to class" online using the World Wide Web with few if any visits to campus).

In addition to creating a web space for your course where your syllabus and other materials can be posted, WebCT has these and many other tools available:

- discussion boards (threaded message forums)
- live chat and whiteboard
- calendar
- gradebook
- notebook
- student presentations
- group discussion areas
- content paths with bookmarking, progress tracking
- glossary
- audio and video clip integration
- CD-ROM integration

WebCT is the primary web-based course management system supported by the Office of Information Technology at The Ohio State University. Instructional Development Specialists and other staff at OIT will assist instructors who wish to use WebCT. There are also workshops and other opportunities to learn about using WebCT and the pedagogy of online learning through activities coordinated by the Office of Technology Enhanced Learning and Research.

Instructors can request a WebCT course account in the section "For Faculty, Designers." This will reside on a server provided by TELR and maintained by OIT staff.

## Frequently Asked Questions about Technology Support

***How do I get equipment for my classrooms?***

**Equipment Loan, Delivery, and Setup**
Equipment such as video recorders, camcorders, televisions, audio recorders, laptop computers, liquid crystal display panels, overhead projectors, film and slide projectors, and projection booth operators for large lecture facilities can be checked out with pre-arrangement or on walk-in basis. Equipment can be picked up or delivered and set up. Call 292-3131 (11 Lord Hall) or 292-9776 (108 Cunz Hall).

***Whom do I contact to get help using equipment in my classrooms?***

**Media Emergencies in the Classroom**
Problems with equipment, technology instruction, mechanics, environment, and scheduling should be reported to the Classroom Help Line (4-HELP) or 292-3448. You may also visit 12 Lord Hall.

**Personal Computing Consultation Services**
Personal Computing Consultation Services are available for Windows and Macintosh hardware and operating systems; Internet, word processing, and spreadsheet software. Send an e-mail to 8help@osu.edu, call 688-HELP, or visit 512 Baker Systems.

***Are there any classrooms or computer centers that my students and I can use for coursework?***

**Student Computer Centers for Classes**
Instructors using interactive technology may require the use of a computer lab for a one-time

meeting or throughout the course of the term. Instructors can reserve public computing sites for these purposes by calling 292-0608 or visiting the Student Computer Centers web site (http://www.oit.ohio-state.edu/scc.html).

**Scheduling a Room for a One-Time Event**
Sometimes an instructor needs a larger or a special classroom for a single occasion, such as a special multimedia presentation or a guest speaker who will draw a large audience. A classroom (standard or multimedia) can be reserved on the registrar's web site (http://www.ureg.ohio-state.edu/ourweb/scheduling/event.html).

**Media Classroom**
The Media Classroom located in Lord Hall is available on short notice for media presentations and satellite downlinks. Call 292-3131, or visit 11 Lord Hall.

***What support is available for creating multimedia to use in my classes?***

**Courseware Design and Development**
Services range from consultation to development of full software projects that may include instructional or systems design and development, multimedia graphics, needs analysis, and formative evaluation. Contact the Technology Support Center at 8help@osu.edu or call 688-HELP.

**The Multimedia Lab**
The Multimedia Lab is a self-service, hands-on production and consultation facility for instructors, staff, and students. Equipment and services include Windows and Macintosh computers, black and white and color imaging and processing; color flatbed scanning; color printing; 35mm slide scanning; 35mm film recording; video and audio digitizing, output, and editing; and some CD-ROM recording. Call 292-2793 to make an appointment or visit the Learning Technologies Center in 60 Denney Hall.

**Media Library**
The Media Library has 6,000 titles on videocassette, film, laserdisc and DVD for classroom use. To view the titles, visit the Media Library web page (http://media1.uts.ohio-state.edu). Call 292-9515 for further assistance.

**Visual Design**
Consultation on, design, and production of professional artistic media, including presentation materials, illustrations, animations, brochures, publications, fliers, logos, signs, graphs, and charts. Hourly labor rates vary for instructional and other types of projects. For more information, call 292-9689 or visit 7 Lord Hall.

**Cunz Hall Learning Technologies Center**
Instructors can place supplementary course materials such as audio and video tapes on reserve for student use. High-speed dubbing of cassette tapes is available at the center. Call 292-9776 or visit 108 Cunz Hall.

**Denney Hall Learning Technologies Center**
The Denney Hall Learning Technologies Center, located in 60 Denney Hall, includes the Multimedia Lab, the Student Computer Center, and a reserve for supplemental course materials for student use. Call 292-2793 or visit 60 Denney Hall.

**Technical Writing and Editing**
Technical writing assistance is available for printed materials, presentations, and web pages. Hourly labor rates vary for instructional and other types of projects. For more information, call 292-9689 or visit 7 Lord Hall.

***Where do I get support for creating online or distance courses?***

**Web Design Services**
Web Design Services offers web page design and development; web site information organization, site structure, and HTML; server support and space for OSU colleges, departments, and organizations; and integration with the OSU home page. For details and fees, send e-mail to webservices@osu.edu or call 688-HELP.

**Distance Learning / Teleconferencing Facilities**
OIT schedules and coordinates distance learning, interactive video, and teleconferencing events for instructors in facilities in 3136 Derby Hall and 252 Campbell Hall and in other campus locations. Services include interactive video between compatible locations, videotaping, satellite downlinking and recording, satellite uplinking, multiple site transmissions, and transmission to university cable. Costs vary, and 10 working days advance notice is required. Instructors can operate the equipment themselves or arrange for a technical operator. To coordinate scheduling, send an e-mail to dlop@osu.edu, call 688-HELP, or visit 11 Lord Hall.

### Technology Enhanced Learning and Research (TELR)

TELR focuses on the uses of technology in the on-campus and distance education learning environments. TELR applications and projects create new opportunities both in and out of the classroom for both instructors and students to supplement academic and research activities.

The following OIT-supported resources can help instructors in the development, delivery, and assessment of technology enhanced learning and research and help students get acquainted with technology-based learning and online education. For more information, visit the TELR web site or contact the Technology Support Center at 8help@osu.edu or call 688-HELP.

- *Class Web Site Registry* is a searchable resource built by instructors for students. Instructors can add their course entries to the database drawing on details in the Registrar's Master Schedule, the Course Bulletin, and their own creativity. Students can search by course title, instructor, department, or quarter to locate distance education courses or any course web site.

- *Course Sorcerer* gives instructors with no experience in web delivery or HTML coding the ability to create and deliver online assessment exercises and surveys that can gather evaluative, customized feedback on courses. Survey results can be imported into most spreadsheet and statistical packages for easy analysis.

- *FrontPage 2000* is a powerful general web development software tool for instructors that is part of the Microsoft Buckeye Bundle. FrontPage is a good choice for those who do not know HTML coding or do not want to spend a lot of time learning technology. Web server space is available for courses using this supported development tool.

- *TechCheck* is a four-part instrument that helps students assess their hardware and software capabilities, plus their learning styles, leadership, and group communication skills. When used as a prerequisite to technology-enhanced courses, it can help determine if students meet the requirements of those classes.

- *WebCT* is a software tool to help instructors without technical expertise create sophisticated web-based educational environments, whether entire online courses or supplemental on-campus course web pages. Web server space is available for courses using this supported development tool.

### Free Technology Workshops

Free workshops for instructors, staff, and students are offered each quarter. Sample topics are Searching the Internet, Creating Accessible Online Courses for Students with Disabilities, HTML for the World Wide Web, Creating Basic Web Pages, Creating Basic Web Pages (with Netscape Composer or FrontPage 2000), Beginning and Intermediate Windows 98 and Microsoft Office 2000, Creating Effective Presentations with PowerPoint, and Managing Mailing Lists (listservs). For the list of the courses offered, visit their web site (http://www.oit.ohio-state.edu/compcourses.html). To register, send e-mail to 8help@osu.edu or call 688-HELP, preferably during the first two weeks of the quarter.

## Recommended Readings on Instructional Technology

Items preceded with an asterisk (*) can be found in the FTAD resource suite.


*Albright, M. J., & Graf, D. L. (1992). *Teaching in the information age: The role of educational technology. New Directions for Teaching and Learning, No. 51*. San Francisco: Jossey-Bass.

*Brown, D. G. (Ed.). (2000). *Interactive learning: Vignettes from America's most wired campuses*. Bolton, MA: Anker.

*Hanna, D. E., Glowacki-Dudka, M., & Conceição-Runlee, S. (2000). *147 practical tips for teaching online groups: Essentials of web-based education*. Madison, WI: Atwood Publishing.

*Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco: Jossey-Bass.

# 7: Testing and Grading: Assessing Student Performance

There are two main reasons why university instructors assess students' work. The most common is to assign a grade—to make a summative judgment of an individual student's level of success or failure. The other reason is to provide formative feedback, both to the students as to how well each of them is learning and to the instructor as to how well the class as a whole is doing. Both are important and necessary elements of university teaching.

One of the most important aspects of a successful learning experience is the opportunity for learners to play back to teachers their understanding of the information or processes they are learning. Through this opportunity, they can articulate their growing knowledge and receive correction, if needed, from the teacher. At the same time, teachers can learn how effective they have been in facilitating learning for their students and can use this information to revise their instructional practices.

Educators often stress "authentic" assessment, by which they mean continuously monitoring student performance by seeing what students know or can do while they are learning. These kinds of assessments often involve process skills and are informal, designed to provide ready feedback to both student and teacher. Examples are contained in Angelo and Cross's *Classroom Assessment Techniques* (1993). Students, for example, might be invited to apply a category system to a set of data to see if they understand how to do this; they might be asked to list the main reasons why a certain problem could not be solved using a given procedure to see if they realize the limitations; or they may be asked to keep a portfolio of their written work and comment on their progress periodically. All of these procedures are designed to be natural tests of the learning goals for the purpose of improvement.

Unfortunately, assessment is more often used only to justify the assignment of letter grades than to serve as a diagnostic tool. As Svinicki (1976) points out, there are at least two kinds of occasions when assessment for diagnosis is important. One is at the beginning of a course or a given segment of a course, when it is appropriate to assess what the learners already know about what is to be learned. At these times, a pretest can help the instructor know the strengths and weaknesses of the learners and can suggest ways to modify learning activities accordingly. Another use of diagnostic assessment is the administration of frequent short self-tests to enable students to judge their performance while they are learning. If constructed in such a way that the tests force students to become more aware of the thinking process they use, diagnostic tests can help students develop their skills. These tests can also provide the kind of rapid and frequent feedback that is so important to learning.

Regardless of which purpose is intended, one should begin the process of planning for assessment by first determining what the desired learning outcome is. First decide what you want students to know or be able to do at the end of the course or part of the course, then decide how you will know whether they achieved these goals or not. In some cases these outcomes or objectives will be provided for an instructor. If a course is part of a curricular sequence, if it is the prerequisite for another class, many of the items students must learn will be determined in the curriculum planning process. The syllabus for courses and sections taught by teaching associates is also often (although not always) provided by the department or supervising professor rather than determined by each TA.

Whether the learning objectives are developed by the instructor or provided by another, it is important that the instructor be very clear what these outcomes are. It is very difficult to judge performance if one cannot describe success; it is likewise difficult for students to achieve success if they do not know the target.

Once the desired outcomes are clear, effective assessment tools can be developed to determine student achievement. Different kinds of assessments are appropriate in different settings and for different purposes. Performance assessment is very

important where the learning goals involve the acquisition of skills that can be demonstrated through action. In areas such as music, theater, art, dance, medicine, and physical education, much of the learning will be demonstrated through assessment of actual performance. Papers and other assignments are also methods for assessing student achievement. The most common type of test in college settings, however, is the examination. This can, of course, come in many formats: essay, multiple choice; paper and pencil; online, take-home, in-class; etc.

This section will provide some general guidelines for formal tests, focusing on the examinations as they are used most routinely—for the purpose of assessing learning at the end of an instructional segment. Assessing student writing, both essay tests and papers will be reviewed. Finally, guidelines for performance assessment will be offered.

## General Tips about Written Tests

By far, the most common use of assessment in college settings involves the written test administered at given intervals throughout the course. Such examinations usually follow either an open-response (essay) or limited-response (multiple choice) format. The following sections focus on traditional test formats. However, there are a variety of creative ways with which instructors can approach testing. For example, an extensive collection of samples of instructor-made tests in the sciences is available in Tobias and Raphael (1997).

In areas where written tests are used, some general advice for instructors includes the following:

*Compose test items throughout the quarter.* Instructors can compose test items as they progress through the term, rather than all in one sitting. Doing so will help avoid fatigue later on, and will result in items that are presented closer to the way in which the information was discussed in class and in a more even distribution.

*Mix question types.* It is often advantageous to mix types of items (multiple choice, essay) on a written exam or to mix types of exams (a performance component with a written component). Weaknesses connected with one kind of item or component or in students' test-taking skills will be minimized.

*Test early to demonstrate testing style.* It is helpful for instructors to test early in the term and consider discounting the first test if results are poor. Students often need a practice test to understand the format each instructor uses and anticipate the best way to prepare for and take particular tests.

*Test often to keep students on task.* Frequent testing helps students avoid getting behind, provides instructors with multiple sources of information to use in computing the final course grade (thus minimizing the effect of "bad days"), and gives students regular feedback.

*Test what you really want students to learn.* It is important to test various topics in proportion to the emphasis they have been given in class. Students will expect this practice and will study with this expectation.

*Do not let errors in the test create errors in student responses.* On written exams, it is important to proofread exams carefully and, when possible, have another person proofread them. Tiny mistakes, such as misnumbering the responses, can cause big problems later. Collation should also be checked carefully, since missing pages can cause a great deal of trouble.

*Check borrowed items carefully.* Instructors should be cautious about using tests written by others. Often, items developed by a previous instructor, a textbook publisher, etc., can save a lot of time, but they should be checked for accuracy and appropriateness in the given course.

*Create a test bank.* If enough test items are developed and kept out of circulation between tests, it is possible to develop a test item bank from which known effective items can be reused on multiple versions or offerings of a test.

*Avoid items that depend on correctly answering other items.* Generally, it is wise to avoid having separate items depend upon answers required in previous items. A student's initial mistake will be perpetuated over the course of succeeding items, penalizing the student repeatedly for one error.

*Start easy to build confidence.* Placing less difficult items or tasks at the beginning of an exam can help students who experience test anxiety reduce their

preliminary tension and thus provide a more accurate demonstration of their progress.

*Get feedback on items.* A good way to detect test errors in advance is by pilot testing the exam. Instructors can take the test themselves or ask colleagues and/or former students to critique it.

*Make appropriate accommodations.* It is important to anticipate special accommodations that students with physical or learning disabilities or nonnative speakers may need. The instructor should anticipate special needs in advance and decide whether or not students will be allowed the use of dictionaries, extra time, separate testing sites, or other special conditions. Students with disabilities registered with the Office for Disability Services (292-3307; see Appendix) are entitled by law to "appropriate accommodations" if they request them. ODS will help determine what is appropriate and how to implement these accommodations.

*Bring enough copies.* Having too few copies of a written exam can be a disaster. Instructors can avoid problems by bringing more copies of the exam than they think they will need.

*Minimize distractions.* Instructors can minimize interruptions during the exam by writing on the board any instructions or corrections that need to be made after the exam has begun and calling students' attention to them. Before the exam, students can be informed that they should check the board periodically for instructions or corrections.

## Planning the Test

A good test reflects the goals of the course. It is congruent with the cognitive or psychomotor skills that the instructor wants the students to develop and with the content emphasis that has occurred during the instruction. That is to say, it tests student achievement of the central learning objectives of the course. If, for example, the instructor has been mainly concerned with having students memorize a body of factual material, the test should ask for recall of this material. If the instructor has been trying to develop analytic abilities in the students, a test that asks for recall is inappropriate and will cause the students to conclude that memorization is the instructor's true goal. Similarly, if the instructor has focused on the War of 1812 in the majority of the class sessions and activities, this emphasis should be reflected in the test. A test that covers a much broader period will be regarded as unfair by the students, even if the instructor has told them that they are responsible for material that has not been discussed in class. Students go by instructors' implicit values more than their stated ones.

To plan a test which is consistent with their goals and their content emphasis, many instructors use a test matrix or blueprint such as the one illustrated below. Arrayed down one column are the learning objectives that the test is to assess and arrayed across the columns are the concepts or content element to be covered on the test. The instructor uses the matrix by checking those points of intersection that reflect the cognitive and content goals of the course or instructional unit and writing items or tasks accordingly. The matrix is sometimes used after the initial draft of a test has been written or composed to determine if it is unbalanced in its emphasis and needs to be revised.

| | | Level of Understanding Required | | | Number of Questions | % of Test Devoted to Each Content Area |
|---|---|---|---|---|---|---|
| | | Questions which Measure **Application** | Questions which Measure **Recall/Restatement** | Questions which Measure **Synthesis/Evaluation** | | |
| Content Area to be Tested | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Number of Questions | | | | | | |
| % of Test Devoted to Each Level of Understanding | | | | | | |

*Adapted from Jacobs and Chase (1992).*

# Test Item Design

## Limited-Choice vs. Open-Ended Items

Instructors often ask, "Are essay tests better than multiple-choice tests?" While there is, in some disciplines, a feeling that essay tests are morally superior to "multiple-guess," the answer, of course, depends on the circumstances and on the goals of the test. The advantages and disadvantages of two main types of items are discussed below in terms of the various issues that will often be considered when a test is being developed.

The term "limited-choice" will be used here to describe test questions that require students to choose one or more given alternatives (multiple choice, true/false, matching columns), and "open-ended" will be used to refer to questions that require students to formulate their own answers (sentence completion, short answer, essay). This avoids implying that one type of question is automatically "objective" and the other necessarily "subjective"—a faulty assumption, since bias can occur with either type of test. Following are some comparisons of the two types of items.

### Exam Construction and Grading Time

The most obvious difference between open-ended and limited-choice items is the amount of time the instructor spends on them. While it takes time to construct open-ended items well, it generally is much more time consuming to construct limited-choice items both because many more items are needed for the average exam and because it is extremely difficult to write good items. Experienced test constructors report producing as few as one to three "good" limited-choice items per hour. While it is easier to generate open-ended items, it is much more time consuming to grade them than limited-choice items. One exam consisting of only open-ended items may take as long to grade as an entire set of exams made up of limited-choice items. If the limited-choice exams are mechanically scored, the differences are even more extreme.

### Level of Learning Objectives

In principle, both limited-choice and open-ended items can be used to test a wide range of learning objectives. In practice, most people find it easier to construct limited-choice items to test recall and comprehension and open-ended items to test higher-level learning objectives, but other possibilities exist. Limited-choice items that require students to do such things as apply concepts to new situations or analyze text or pictures using a theory go beyond rote learning. It is also true that overly focused essay questions can easily stay at the recall level.

### Content Coverage

Since more limited-choice than open-ended items can be used in exams of the same length, it is possible to sample more broadly over a body of subject matter with limited-choice items, while well-constructed, open-ended items can allow students to demonstrate their understanding in

depth. A small number of open-ended items that are broad in scope and call for the inclusion of many specifics can also test comprehensively.

### Practice and Reward of Writing and Reading Skills

A long-term goal of many learning tasks in higher education is the cultivation of students' reading and writing skills. Limited-choice items give virtually no practice in writing, while open-ended exams, particularly short-answer and essay, provide opportunities to improve writing. Open-ended exams, therefore, give students with good writing skills an advantage over those who do not have these skills, and limited-choice exams do not favor students who write well. They do, however, favor students who read well, since these students have the skills to attend to key words, recognize logical qualifications and cues, and discriminate among close choices.

### Practice and Reward of Creativity and Divergent Thinking

Open-ended items, especially essay questions, can provide far more opportunity for creative or divergent thinking than limited-choice items. However, this depends on how the item is written since an essay question can call for convergent thinking, such as reaching a set solution to a problem situation. An argument often made about limited-choice exams is that they not only fail to foster, but actually penalize, divergent thinking.

### Feedback to Teacher and Student

Limited-choice exams allow faster feedback than open-ended exams. Open-ended exams, however, are usually more revealing to the teacher about specific student strengths and weaknesses in processes such as comprehension and reasoning and can occasion more dialogue if teacher and student use this possibility.

### Length of Exam

Many limited-choice items can be answered in the amount of time it takes to answer one open-ended item, particularly essay questions. Limited-choice items or the briefer type of open-ended items (sentence completions, short answers) thus are more appropriate for short quizzes and short exams than essay questions.

### Size of Class

Unless multiple graders are available, it is very difficult to give frequent open-ended exams and provide timely feedback in a high-enrollment course. Exams that consist mainly of limited-choice items are usually more practical under these circumstances.

### Reliability in Grading

Open-ended exams are much harder to grade reliably (consistently) than limited-choice exams. However, to enhance reliability, one can use such methods as establishing model answers, holistic scoring, primary trait analysis, and grade-norming to work toward inter-rater agreement with multiple graders (see the section on grading later in this chapter.)

### Reusability of Exam

Some instructors have serious concerns about students having access to past exams. It is usually safe to assume, regardless of the precautions you take, that some students will have access to your old exams. In general, exams consisting of a large number of limited-choice items are easier to reuse than those consisting of only a few essay questions since it is harder in this case for students to remember and transmit the questions to others who will take the exam after them (if the printed exam does not get into circulation). If a large item bank is built and different exams can be randomly generated from the same pool of questions, limited-choice items are highly reusable. On the other hand, open-response exams can be altered in ways that require each student to do his or her own thinking, without requiring the instructor to start from scratch in designing the question.

### Prevention of Cheating

Limited-choice exams provide easier conditions for cheating than open-ended exams, since single letters or numbers are far easier to see or hear than extensive text. Cheating can be minimized in several ways, however, such as by using alternate test forms and controlling seating. Faculty and TA Development (292-3644; see Appendix) has a handout on proactive steps which instructors can take to prevent cheating.

## Writing Test Items

In the discussion of limited-choice items below, the

term *stem* is used to refer to the part of the item that asks the question. The terms *responses*, *choices, options,* and *alternatives* are used to refer to the parts of the item that will be used to answer the question. For example:

Stem: Who is the author of Jane Eyre?

Responses:
A) Emily Brontë
B) Charlotte Brontë
C) Thomas Hardy
D) None of the above

## Multiple-Choice Items

Multiple-choice items are considered to be among the most versatile of all item types. They can be used to test factual recall as well as level of understanding and ability to apply learning. Multiple-choice items can also provide an excellent basis for post-test discussion, especially if the discussion addresses why the incorrect responses were wrong as well as why the correct responses were right. Unfortunately, they are difficult and time consuming to construct well. They may also appear too discriminating (picky) to students, especially when the alternatives are not well constructed, and are open to misinterpretation by students who read more into questions than is there.

Suggestions for constructing multiple-choice items include:

- Use the stem to present the problem or question as clearly as possible; eliminate excessive wordiness and irrelevant information.
- Use direct questions rather than incomplete statements for the stem.
- Include as much of the item as possible in the stem so that alternatives can be kept brief. Include in the stem words that would otherwise be repeated in each option.
- In testing for definitions, include the term in the stem rather than as one of the alternatives.
- List alternatives on separate lines rather than including them as part of the stem so that they can be clearly distinguished.
- Keep all alternatives in a similar format (e.g., all phrases, all sentences, etc.).
- Make sure that all options are plausible responses to the stem. (Poor alternatives should not be included just for the sake of having more options.)
- Check to see that all choices are grammatically consistent with the stem.
- Try to make alternatives for an item approximately the same length. (Making the correct response consistently longer is a common error.)
- Use misconceptions which students have indicated in class or errors commonly made by students in the class as the basis for incorrect alternatives.
- Use "all of the above" and "none of the above" sparingly since these alternatives are often chosen on the basis of incomplete knowledge. Words such as "all," "always," and "never" are likely to signal incorrect options.
- Use capital letters (A, B, C, D, E) on tests as responses rather than lower-case letters ("a" gets confused with "d" and "c" with "e" if the type or duplication is poor). Instruct students to use capital letters when answering (for the same reason), or have them circle the letter or the whole correct answer, or use scannable answer sheets.
- Try to write items with equal numbers of alternatives in order to avoid asking students to continually adjust to a new pattern caused by different numbers.
- Put the incomplete part of the sentence at the end rather than the beginning of the stem. Phrase the item as a statement rather than a direct question.
- Use negatively stated items sparingly. (When they are used, it helps to underline or otherwise visually emphasize the negative word.)
- Make sure that there is only one best or correct response to the stem. If there are multiple correct responses, instruct students to "choose the *best* response."
- Limit the number of alternatives to five or less. (The more alternatives used, the lower the probability of getting the correct answer by guessing. Beyond five alternatives, however, confusion and poor alternatives are likely.)

- Randomly distribute correct responses among the alternative positions so that there are no discernible patterns to the answer sequence (ABBABBABB, etc.). Use a nearly equal proportion of A's, B's, C's, etc.
- State items so that there is only one interpretation of their meaning and use language that students will understand. Do not make it a test of reading skills unless that is your goal.

Suggestions for constructing multiple-choice items that measure higher level objectives include:

- Present unfamiliar, real-world problems or construct scenarios for the students. Write several items which ask students to apply concepts or theories to the scenario or to evaluate several alternative solutions.
- Present actual quotations from newspapers, journals, or other published sources, pictures, charts, tables, graphs, or other primary source material. Ask students to interpret or evaluate the quotations.

## True/False Items

True/false items are relatively easy to prepare since each item comes rather directly from the content. They offer the instructor the opportunity to write questions that cover more content than most other item types since students can respond to so many in the time allotted. They are easy to score accurately and quickly. True/false items, however, may not give a true estimate of the students' knowledge since half can be answered correctly simply by chance. They are very poor for diagnosing student strengths and weaknesses, as they are, in effect, multiple-choice items with only two choices. They are also often considered to be "tricky" by students since in order to make them difficult enough, one must often make them obscure. Since true/false questions tend to be either extremely easy or extremely difficult, they do not discriminate between students of varying ability as well as other types of questions do.

Suggestions for constructing true/false items include:

- Keep language as simple and clear as possible.
- Use a relatively large number of items (75 or more when the entire test is T/F).
- Avoid inadvertently testing recall by using verbatim sentences from the textbook or other course materials when you wish to test at another level.
- Be aware that extremely long or complicated statements will test reading skill rather than content knowledge.
- Require students to circle or underline a typed "T" or "F" rather than to fill in a "T" or "F" next to the statement, thus avoiding having to interpret confusing handwriting.
- Avoid the use of negatives, especially multiple negatives.
- Avoid ambiguous and trick items.
- Make sure that the statements used are entirely true or entirely false. (Partially or marginally true or false statements cause unnecessary ambiguity.)
- Use certain key words sparingly since they tip students off to the correct answers. (The words *all*, *always*, *never*, *every*, *none*, and *only* usually indicate a false statement, whereas the words *generally*, *sometimes*, *usually*, *maybe*, and *often* are frequently used in true statements.)
- Use precise terms, such as *50% of the time*, rather than less precise terms, such as *several*, *seldom*, and *frequently*.
- Use more false than true items, but not more than 15% more. (False items tend to discriminate more than true items.)

## Matching Items

Matching items are generally quite brief and uninvolved and are especially suitable for *who*, *what*, *when*, and *where* questions. They can, however, be used to have students discriminate among and apply concepts. They permit efficient use of space when there are a number of similar types of information to be tested. They are easy to score accurately and quickly. Among the drawbacks of matching items are that they are difficult to use to measure learning beyond recognition of basic factual knowledge, they are usually poor for diagnosing student strengths and weaknesses, they are appropriate in only a limited number of situations, and they are difficult to construct since parallel information is required. Students will also often use process of elimination to guess answers to

items they do not really know.

Suggestions for constructing matching items include:

- Use only homogeneous material in a set of matching items (i.e., dates and places should not be in the same set).
- Use the more involved expressions in the stem and keep the responses short and simple.
- Supply directions that clearly state the basis for the matching, indicating whether or not a response can be used more than once, and stating where the answer should be placed.
- Make sure that there are never multiple correct responses for one stem (although a response may be used as the correct answer for more than one stem).
- Avoid giving inadvertent grammatical clues to the correct response (e.g., using a/an, singular/plural verb forms).
- Arrange items in the response column in some logical order (alphabetical, numerical, chronological) so that students can find them easily.
- Avoid breaking a set of items (stems and responses) over two pages.
- Use no more than 15 items in one set.
- Provide more responses than stems to make process-of-elimination guessing less effective.
- Number each stem for ease in later discussions.
- Use capital letters for the response signs rather than lower-case letters.

## Completion Items

Completion items are especially useful in assessing mastery of factual information when a specific word or phrase is important to know. They preclude the kind of guessing that is possible on limited-choice items since they require a definite response rather than simple recognition of the correct answer. Because only a short answer is required, their use on a test can enable a wide sampling of content. Completion items, however, tend to test only rote, repetitive responses and may encourage a fragmented study style since memorization of bits and pieces will result in higher scores. They are more difficult to score than forced-choice items and scoring often must be done by the test writer since more than one answer may have to be considered correct. On the whole, they have little advantage over other item types unless the need for specific recall is essential; however, they can be effective at collecting wrong answers that students will choose for future use as distractors in multiple-choice items.

Suggestions for constructing completion items include:

- Use original questions rather than taking questions directly from the text.
- Provide clear and concise cues about the expected response in the statement.
- Use vocabulary and phrasing that comes from the text or class presentation.
- When possible, provide explicit directions as to what amount of variation will be accepted in the answers.
- Give much more credit for completion items than for T/F or matching items.
- Avoid using a long quote with multiple blanks to complete.
- Require only one word or phrase in each blank.
- Facilitate scoring by having the students write their responses on lines arranged in a column to the left of the items.
- Only ask students important terms or expressions in completion items.
- Avoid providing grammatical clues to the correct answer by using a/an, etc., instead of specific modifiers.

## Essay/Short Answer Items

The main advantages of essay and short answer items are that they encourage students to strive toward understanding a concept as an integrated whole; permit students to demonstrate achievement of higher level objectives such as analyzing given conditions and critical thinking; allow expression of both breadth and depth of learning; and encourage originality, creativity, and divergent thinking. Written items offer students the opportunity to use their own judgment, writing styles, and

vocabularies. They are less time consuming to prepare than any other item type. Unfortunately, tests consisting only of written items permit only a limited sampling of content learning due to the time required for students to respond. Essay items are not efficient for assessing knowledge of basic facts and poorly constructed questions provide students more opportunity for bluffing, rambling, and "snowing" than limited-choice items. They favor students who possess good writing skills and neatness and are pitfalls for students who tend to go off on tangents or misunderstand the main point of the question. The main disadvantage, however, is that essay items are very difficult and time consuming to score and potentially subject to biased and unreliable scoring.

Suggestions for constructing essay questions include:

- Use novel problems or material whenever possible, but only if they relate to class learning.
- Make essay questions comprehensive rather than focused on small units of content.
- Provide clear directions as to the expectations; a grading rubric will help students meet expectations and will facilitate effective grading.
- Allow students an appropriate amount of time. (It is helpful to give students some guidelines on how much time to use on each question, as well as the desired length and format of the response, such as full sentences, phrases only, outline, and so on.)
- Inform students, in advance of answering the questions, of the proportional value of each item in comparison to the total grade.
- Require students to demonstrate command of background information by asking them to provide supporting evidence for claims and assertions.

# Using Item Analysis to Test the Test

After a test has been administered and graded, a good way to judge its quality, particularly in the case of a limited-choice test, is to perform an item analysis. It is especially important to do this when test items will be reused or when there is sufficient doubt about the test results to consider dropping some items as invalid when computing the final grade. If machine scannable test forms are used and processed by Material Distribution (688-3051; see Appendix) in the Registrar's Office, the instructor will receive a printout with item analysis results already computed. See below for instructions on how to interpret these statistics or call Faculty and TA Development (292-3644) for a consultation.

If the instructor is scoring the test, standard statistical software packages (such as SPSS or DataDesk) are available for doing item analysis. It is possible to perform an item analysis without a computer, however, especially if the test is short and the class size is small. The information below describes how to compute the two most common item analysis statistics and describes the principles of these as well.

## Procedures for Computing Difficulty and Discrimination Indexes

The Difficulty Index of an item tells you the percentage of students who got the item correct. The Discrimination Index tells how well this item correlates with the entire test: Did the students who did well on the test in general do well on this question? Follow these steps to compute Difficulty and Discrimination Indexes:

1. Score each test by marking correct answers and putting the total number correct on the test.
2. Sort the papers in numerical order according to the total score.
3. Determine the upper, middle, and lower groups. One way to do this is to call the top 27% (some people use the top third) of the papers the upper group, the bottom 27% (some people use the bottom third) the lower group, and the remaining papers the middle group.
4. Summarize the number correct and number wrong for each group.
5. Calculate the Difficulty Index for each item by adding the number of students from all groups who chose the correct response and dividing that sum by the total number of students who took the test. The Difficulty Index will range from 0 to 1, with a difficult item being indicated by an index of less than .50 and an easy

Sample Test Grid for 10 Items

| | | ITEM NUMBERS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| UPPER GROUP | Ruth | C | C | C | C | C | C | C | C | C | C |
| | Ahmed | C | C | C | C | C | C | C | C | C | C |
| | Albert | I | C | C | C | C | C | C | C | C | C |
| | Joanne | I | I | C | C | C | C | C | C | C | C |
| | Maria | I | C | C | C | C | C | C | C | C | C |
| | Anne | I | C | C | C | C | C | C | C | C | C |
| | Doris | I | C | C | C | C | C | C | C | C | C |
| | Joshua | I | C | C | C | C | C | C | C | C | C |
| | Nadia | I | C | C | C | C | C | C | C | C | C |
| | Michael | I | C | C | C | I | C | C | C | C | C |
| | NUMBER CORRECT | 2 | 9 | 10 | 10 | 9 | 10 | 10 | 10 | 10 | 10 |
| | NUMBER WRONG | 8 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| MIDDLE GROUP | NUMBER CORRECT | 8 | 12 | 12 | 13 | 12 | 13 | 11 | 11 | 12 | 12 |
| | NUMBER WRONG | 9 | 5 | 5 | 4 | 5 | 4 | 6 | 6 | 5 | 5 |
| LOWER GROUP | Lucille | C | C | C | C | I | C | I | C | I | C |
| | Joseph | C | C | C | C | I | C | I | C | C | C |
| | Chitra | I | I | C | C | C | C | I | C | C | I |
| | Jerome | C | C | C | C | C | C | I | C | C | C |
| | Leslie | C | C | C | C | C | C | I | C | C | I |
| | Nancy | C | C | C | C | C | C | I | I | C | I |
| | Woo Jin | C | C | I | C | C | C | I | I | I | I |
| | Ralph | C | I | I | I | C | C | C | I | I | I |
| | Beth | C | C | I | I | I | I | I | I | I | C |
| | Donald | C | I | C | C | I | C | I | I | I | C |
| | NUMBER CORRECT | 9 | 7 | 7 | 8 | 6 | 9 | 1 | 5 | 5 | 5 |
| | NUMBER WRONG | 1 | 3 | 3 | 2 | 4 | 1 | 9 | 5 | 5 | 5 |
| | DIFFICULTY INDEX | .51 | .76 | .78 | .84 | .73 | .86 | .59 | .70 | .73 | .73 |

item being indicated by an index of over .80.

6. Calculate the Discrimination Index by first calculating for both the upper and lower group students the percentage who answered each item correctly. Subtract the percentage of lower group students from the percentage of upper group students to get the index. The index will range from -1 to +1, with a discrimination over 0.3 being desirable and a negative index indicating a possibly flawed item.

The grid above illustrates an item analysis for a simple set of scores for 37 students on a 10-item test. The names of the 10 students (approximately 27% of the total students) with the highest scores are listed as the "upper group;" the 10 students with the lowest scores (again, approximately 27%) are listed as the "lower group;" and the remaining 17 are listed as the "middle group." On item 1, for example, the Difficulty Index was calculated by totaling the correct responses (C = correct response, I = incorrect response) and dividing by the

number of students (19/37 = .51). The item appears to be on the difficult end of the range.

The Discrimination Index for the same item was obtained by first calculating the percent correct for both the upper and lower groups—20% and 90% respectively—then subtracting the percentage for the lower group from that of the upper group (.20 - .90 = -.70). This negative Discrimination Index indicates that the item is probably flawed. Note that the students who scored poorly on the exam as a whole did well on this item and the students who got the top total scores on the exam did poorly—the reverse of what one would expect. A mistake in the answer key or some error in the question that only the more astute students would catch might be the cause.

## Performance Assessment

In many fields (such as dance, studio art, allied medical professions, and sometimes laboratory sciences), student performance is the most appropriate way to judge student progress. Different kinds of measures will be appropriate for different fields, but some general guidelines are listed below:

*It is important to base the assessment on the specific skills or competencies that the course is promoting.* A course in family therapy, for example, might include performance tests on various aspects that are covered in the course, such as recording client data, conducting an opening interview, and conducting a therapy session. Developing a performance assessment involves isolating particular, demonstrable skills that have been taught and establishing ways in which the level of skill can be assessed for each student. One might, for example, decide that the best way in which a student can demonstrate counseling skills such as active listening would be to have the student play the role of therapist in a simulated session.

*It is best to define the task as clearly as possible.* Rather than simply alerting the students to the fact that their performance will be observed or rated, it is helpful to give more precise instructions on how the test will be structured, including how long they will have, the conditions under which they will perform the task, and other factors that will allow them to anticipate and prepare for the test, *as well as the criteria by which the performance will be assessed*. If possible, it is best in setting up a new assessment situation to ask a student or colleague to do a trial run before using the test with students so that unanticipated problems can be detected and eliminated.

*Good performance assessments identify criteria on which successful performance will be judged and specify these in advance.* For curriculum areas in which it is possible to clearly define mastery, such as, "the student will be able to tread water for five minutes," it is desirable to do so. In most areas, however, effective performance is a complex blend of art and skill, and particular components are very subtle and hard to isolate. In these cases, it is often useful to try to highlight some observable characteristics and to define what would constitute adequate performance. In a test of teaching, for example, students might be expected to demonstrate clarity, organization, discussion skills, reinforcement of student responses, and the like. Operational definitions for specific components to be evaluated may be phrased like the following excerpt from a teaching observation checklist: "Praises student contributions—The teacher acknowledges that he or she values student contributions by making some agreeable verbal response to the contributions. The teacher may say, 'That's a good point,' 'Yes, thank you,' 'Thanks for raising that,' 'Right, well done,' or the like." Such information is helpful to the student as well as to the instructors who will be rating the performance. See the section below on Primary Trait Analysis for an example of one method for doing this.

*It is important to give the same test or kind of test to each student.* When possible, it is best to arrange uniform conditions surrounding a performance testing situation. Students can be given the same materials to work with, or the same task. Often, however, particularly in professional practice situations, it is hard to control the context of a performance testing situation. One nursing student may be evaluated while dealing with an especially troublesome patient while another will be working with a helpful patient. In these situations, documenting and allowing for the contextual influences on the performance are extremely important parts of the evaluation, *but the evaluator will be called upon to exercise informed, professional judgment.*

In summary, the effectiveness of a given performance assessment is directly related to how appropriate it is, given the course objectives; how clearly the tasks are defined; how well the criteria for successful performance have been identified and conveyed; and how uniform the testing is for all

students involved. The section on grading later in this chapter contains a discussion on grading students in a performance situation.

## Assessing Writing

The two most common ways of evaluating student writing are *analytic* and *holistic* scoring. The analytic approach to grading considers writing to be made up of various features, such as creativity, grammar, succinct expression of concepts, and punctuation, each of which is to be scored separately. An analytic writing score is made up of a sum of the separate scores and is often a weighted sum developed after multiplying each score by numbers representing the relative importance of the features the instructor wishes to emphasize. A recent development of this approach is called *primary trait analysis*. This method is similar to other types of analytic evaluation in that it scores the important traits of the work separately, but it then aggregates the data to assess the learning of the entire group as well as each individual student.

Holistic scores are arrived at by comparing individual student essays to model essays or descriptive rubrics representing good, fair, and poor responses to the assignment.

A third variation is a type of *global scoring*, which assumes that writing is the sum of various features, but assigns the final score without the use of a scale. This method, which is most frequently used in casual approaches to grading writing, tends to result in less precise evaluation and less concrete feedback for the student.

### Analytic Scoring

Analytic scoring is the traditional approach to grading writing. Instructors who use analytic scoring view writing as a demonstration of many isolated skills which when graded separately and added together will come up with an appropriate evaluation of the piece. Many instructors choose to use analytic scoring because of its strengths, some of which are as follows:

- Analytic scoring helps instructors keep the full range of writing features in mind as they score. An essay that is poorly punctuated may present a good analysis of a problem and/or strongly state a position. However, the punctuation may overwhelm the instructor to the degree that he or she fails to notice the achievements in the essay and grades it too low.
- It allows students to see areas in their essays that need work when accompanied by written comments and a breakdown of the final score. Its diagnostic nature provides students with a road map for improvement.

Some of the weaknesses of analytic scoring are as follows:

- It is time consuming. Teachers who score analytically usually are required to make as many as 11 separate judgments about one piece of writing. Furthermore, not all students actually make their way through the analytic comments so painstakingly written on their papers nor will all be able to make profitable use of those comments on succeeding writing assignments.
- Negative feedback can be pedagogically destructive. Teachers who combine analytic scoring with confrontational or unclear comments—especially about issues of grammar—may actually inhibit student growth.

The following guidelines may be useful to maximize the effectiveness of analytic scoring:

- A written analytic scale, such as the one below, helps to clearly define grading criteria and if shared with students can foster an understanding of what is expected and how it will be evaluated.
- Criteria are weighted according to their relative importance. For instance, if the goal of an assignment is the assimilation of course materials, then logic, ideas, arrangement, and resourcefulness would be rewarded more than grammar and mechanics.
- Formative feedback in the form of marginal and end comments is most effective when the comments balance challenge and support. Writing is tough to do, and most students feel inadequate about their writing skills from having too little practice at it.
- Instructors can downplay the possible confrontational effect of grading by being sensitive to such issues as using sarcasm in their comments, obliterating a student's work with lines, etc.

**Example of an Analytic Scoring Scale**

| Criteria | 4 3 2 1 0 | Weight |
|---|---|---|
| 1. Recognition of main points | ◁——▷ (accurate) (inaccurate) | 30% |
| 2. Ability to summarize | ◁——▷ (succinct) (too much or too little) | 10% |
| 3. Ability to distinguish and analyze the differences between the two approaches/viewpoints/analyses | ◁——▷ (clear, insightful) (vague) | 20% |
| 4. Ability to state a position | ◁——▷ (clear) (wishy-washy) | 5% |
| 5. Ability to support a position with information derived from the articles | ◁——▷ (adequate, logical, refers to articles) (inadequate, illogical, does not refer to articles) | 15% |
| 6. Organization | ◁——▷ (clear) (confusing) | 10% |
| 7. Readability: Language use and mechanics | ◁——▷ (appropriate, correct, contributes to communication) (inappropriate, incorrect, interferes with communication) | 10% |
| | | 100% |

*This scoring guide is from Farris (1987).*

## Primary Trait Analysis

The *primary traits* of a piece of student work are the instructor-defined criteria which are necessary for the successful completion of the task. Unlike holistic scoring which lumps these together, looks at them simultaneously, and then assigns one grade, Primary Trait Analysis (PTA) *scores each trait separately*. This allows an instructor to systematically compare student performance for each trait as well as to assign grades to individual students. Instructors can then identify strengths and problems in their preparation of students for their task, in test or activity design, and in student performance. PTA is a way to take what we already do—record grades—and translate that process into both a very effective strategy for responding to student work and an assessment device (Walvoord & McCarthy, 1990).

Advantages of PTA for assessment include (1) using information that is already available, (2) bringing to consciousness the mostly subconscious processes that go into recording grades, and (3) looking at performance strengths and weaknesses in individual pieces of an assignment, course, or curriculum. This section illustrates how PTA works.

Each teaching professor has a view of what he or she wants students to accomplish. The view, even if it is an unconscious one, pictures ideal student achievements at the end of a particular class, a unit of instruction, or an entire curriculum. At the end of an assignment or course, students who achieve the goals and "look like" the ideal tend to get A's; those who look a bit less like the ideal get B's, and so on. Because students (and professors) are not perfect, achievement of goals is usually uneven. Students may excel in one area and be merely adequate in another. Nevertheless, most instructors record a single, holistic grade that tends to sum the student's performance and provide an overall judgment of merit.

Primary Trait Analysis (PTA) does *not* yield a single, holistic grade. Instead, it reveals parts. Below is a comparison of two methods of grading. The first approximates what professors do when recording holistic grades, the other outlines what professors could do with the same information when performing PTA.

## Holistic Grading: An Example

*Course objective*: Students are required to "understand" scientific conclusion and process. The scientific paper is a visible representation of scientific understanding.

| Paper | #1 | #2 | #3 | #4 | #5 | #6 |
|---|---|---|---|---|---|---|
| Grade | C | A | C+ | A | B- | C- |

*Assignment:*

- Introduction section should contain history and context plus the testable hypothesis.
- Materials and Methods section should contain general approach plus specific equipment and procedures.
- Results section should contain observations upon which conclusion is based.
- And so on, including correct format, references, mechanics, and grammar.

*Grading criteria*: The instructor constructs a single rubric:

> In an "A" paper, the introduction captures history and context with flair and cleverly embeds hypothesis; the Materials and Methods section correctly and succinctly outlines approach, procedures, details in prose that needs no interpretation or editing; the Results section describes honestly, briefly, and vividly; and so on, including correct format, references, mechanics, and grammar.
>
> Non-A papers exhibit these traits to a diminishing degree.

The instructor reads Papers #1, 2, 3,… written by Students #1, 2, 3… respectively, and assigns each paper a single grade which accounts for all the criteria simultaneously.

## Primary Trait Analysis: An Example

*Course objective*: Students are required to "understand" scientific conclusion and process. The scientific paper is a visible representation of scientific understanding.

*Primary traits*: These could include:

a. Introduction section should contain history and context plus the testable hypothesis.
b. Materials and Methods section should contain general approach plus specific equipment and procedures.
c. Results section should contain observations upon which conclusion is based.
d. And so on, including correct format, references, mechanics, and grammar.

The components of the assignment are recognized as *primary traits* (essential or central components of the discipline) to be learned by the student.

I. Introduction
  A. Provides history and context.
  B. Contains the hypothesis to be tested.
II. Materials and Methods
  A. Outlines the general approach whereby the hypothesis is tested.
  B. Enumerates equipment and commodities and outlines procedures whereby a knowledgeable student could replicate the work.
III. Etc.

The instructor constructs rubrics representing the level of achievement for each primary trait:

*Introduction A:*
*4 points:* History well researched. Major contributions presented with discrimination and balance.

Controversies outlined and weighed.
*3 points:* History adequately outlined. Role of major contributions recognized. Relative merit of conflicting opinions somewhat unclear.
*2 points:* Historical outline present. Contextual development and relative merit of contributions unrecognized or ragged. Presentation of conflicting ideas absent.
*1 point:* Historical outline absent or garbled. Contributions listed as in a diary; consideration of merit absent. Notions of conflicting ideas ignored.

*Introduction B:*
*4 points:* Hypothesis clearly recognized or well crafted and elegantly stated in testable form. Hypothesis cleverly embedded in context.
*3 points:* Hypothesis recognized or well stated. Contextual connections evident.
*2 points:* Hypothesis detectable but may not be stated in testable form. Contextual connections tenuous.
*1 point:* Hypothesis undetectable or garbled so as to violate scientific principles. Context absent or ignored.

*Materials and Methods B:*
*4 points:* Procedures clear, need no interpretation. Appropriate details present.
*3 points:* Procedures easily interpreted. Relevant information dominates.
*2 points:* Procedures unclear but interpretable. Irrelevant information interferes.
*1 point:* Procedures scrambled. Irrelevant information predominates. Reads more like a bad diary.
Students write paper in scientific report format.

- Ideal paper provides indicator of understanding.
- Less ideal papers do not adequately demonstrate this understanding, but variation from ideal is not uniform across all sections (may understand context but be unable to articulate hypothesis).

The instructor notes non-uniform student performances regardless of grade.

- In the example, the instructor reads Papers #1, 2, 3,… as before but assigns point values to various parts according to rubrics. By adding points *horizontally,* the instructor arrives at point values for the two primary traits found in the Introduction (18 and 11), the two primary traits found in the Materials and Methods section (16 and 20), and so on as shown in the right hand column labeled *Assessment.*

The crucial point is that if the instructor compares *grades* only, he or she would be unlikely to uncover the following penetrating insight: regardless of their grades, students are having difficulty learning how to phrase or interpret a scientific hypothesis (Intro. IB). By comparing *assessments of primary traits*, instructors have integrated assessment information to make their curriculum visible.

In addition, PTA can be used to objectively compare multiple sections of the same class.

| | Paper#1 | Paper#2 | Paper#3 | Paper#4 | Paper#5 | Paper#6 | Assessment |
|---|---|---|---|---|---|---|---|
| Intro. IA | 3 | 4 | 3 | 3 | 3 | 2 | 18 |
| Intro. IB | 1 | 3 | 2 | 2 | 2 | 1 | 11 |
| M&M IIA | 2 | 3 | 2 | 3 | 3 | 3 | 16 |
| M&M IIB | 3 | 4 | 3 | 4 | 3 | 3 | 20 |
| Etc. | 3 | 3 | 3 | 4 | 3 | 2 | 18 |
| Grade | 12 | 17 | 13 | 16 | 14 | 11 | |

## General Notes about Primary Trait Analysis

- Primary traits may be identical to *goals* or *learning objectives.*
- If the sample is large, multiple readings of the same papers are unnecessary.
- Assessment makes learning visible to dispel assumptions, guesses, and rumors.
- PTA makes teaching (and grading) conscious. It uses information already (unconsciously) available.
- PTA, as illustrated, will allow the instructor to determine *what* students have learned, but not the relative contributions of curriculum structure, teaching styles, learning styles, effort, student study habits, etc.

## Holistic Scoring

Holistic evaluation of writing has become more common than any form of analytic scoring in some disciplines. This form of evaluation requires that the instructor develop a set of criteria that describe the whole essay at various levels of success. These criteria are based on the desired outcomes and should be couched in language appropriate to the discipline. The example below demonstrates how criteria developed for one field can be adapted for another.

### English Composition

*GRADING CRITERIA*

The following grading criteria will be applied to all written work in this course.

A: Perhaps the most noticeable characteristic of the "A" level paper is rich content—the quality of the information imparted leaves us feeling that we have learned or experienced something of true value. Its compelling content is accompanied by technical expertise, as well. The "A" paper displays evidence of sophisticated critical thinking and offers special insight into the topic discussed. It is also marked by stylistic finesse: the opening section is engaging, the language is precise, fresh, and highly descriptive; the thesis is clear and exciting; the sentence structure is varied; and the tone has a presence that enhances the purpose of the paper. It leaves the reader satisfied, intrigued, and eager to reread it, for a second reading promises to provide new insight and depth.

B: A "B" level paper is significantly above average and is noteworthy not only for its being almost free of surface errors, but for its competence in delivering substantial information and a strong perspective. Its content goes beyond the obvious; it is logically ordered, well developed, and unified around a clear organizing principle that is apparent early in the paper. Transitions are for the most part smooth, and sentence structures are pleasingly varied. The diction of the "B" paper makes a memorable and pleasant reading experience, offering high quality substance and few distractions.

C: A "C" paper is generally competent and meets the assignment adequately. It has few mechanical errors and is reasonably well organized. Development can be thin at places, or the information and perspectives it offers can be superficial or common-

### Evolutionary Biology

*GRADING CRITERIA*

The following grading criteria will be applied to all written reports in this course. These will include lab notebook entries as well as laboratory reports.

A: An "A" level paper is truly outstanding. Its stands out from B papers by its sophisticated treatment of the topic and clear presentation. The "A" paper displays extensive evidence of critical thinking and offers special insight into the topic discussed. In addition to careful and thorough data analysis, the "A" paper synthesizes and applies the information and concepts presented with background material. When references are cited, they are integrated into the paper in a meaningful way which enhances understanding of the subject. The opening section of the "A" paper is engaging and relevant; the language is highly descriptive yet concise; the ideas are clear and exciting. It leaves the reader satisfied and with a better understanding of the material.

B: A "B" level paper is significantly above average. Its content goes beyond the obvious; it is logically ordered, well developed, and clearly presented. Data is analyzed and used to support conclusions. The writing of the "B" paper is typically more concise than that in the "C" paper; it does not contain irrelevant material. The wording is the author's own and goes beyond a rearrangement of the words in the lab manual or text. On the whole, a "B" paper demonstrates an understanding and application of the major concepts of the lab exercise.

C: A "C" paper is generally competent and meets the assignment adequately. It has few mechanical errors and is reasonably well organized. Often, readers are left with the impression that ideas are vague or general. The discussion and analysis may

| | |
|---|---|
| place. Often, readers are left with this impression because ideas are vague or general. Stylistically, a "C" paper has other shortcomings as well: the opening can be flat, doing little to draw the reader into the piece; the conclusion may be vague or inconclusive; the sentences, besides being a bit choppy, tend to fall into predictable (and hence monotonous) and redundant structures. Tone can be marred by occasional repetitions and imprecisions. The "C" paper gets the job done, but it lacks both imagination and intellectual rigor, and hence does not invite a rereading. | contain flaws. The conclusion may be vague or inconclusive and may not follow logically from the data. The paper may not hold together as a coherent whole. The organization of the paper may not facilitate understanding. The "C" paper gets the job done, but it lacks both depth of understanding and intellectual rigor. |
| D: This paper's treatment of the subject is rudimentary, or it reveals confusion about the issues at hand. While organization is present, it is neither clear nor effective. Sentences are frequently awkward, ambiguous, and marred by serious mechanical errors. Evidence of careful proofreading is lacking. The whole piece may give the impression of having been conceived and written in haste. | D: This paper's treatment of the subject is rudimentary, or it reveals confusion about the issues at hand. While organization is present, it is neither clear nor effective. Major sections of the assignment are missing. The whole piece may give the impression of having been conceived and written in haste. |
| E: This score applies to a paper that is completely off track or has few redeeming qualities. Its theme lacks discernible organization; its prose is garbled or stylistically primitive. Mechanical errors are frequent. Ideas, organization and style all fall far below what is acceptable college writing. | E: This score applies to a paper that is completely off track or has few redeeming qualities. It lacks discernable organization. Mechanical errors are frequent and a substantial part of the required work is missing. Ideas, organization and style all fall far below what is acceptable college writing. |

*From Berkelhamer and Miller, University of California at Irvine (1993).*

It is often useful to share these criteria with students as part of the assignment. Students find it much easier to "hit a target they can see."

In addition to allowing an individual instructor to score essays as a whole, rather than piece by piece, holistic grading can allow groups of evaluators to grade large numbers of essays. Model student essays that exhibit high, average, or low achievement are used as the standards by which several graders evaluate a group of essays. Each evaluator reads the student paper quickly and determines whether it is stronger or weaker than its closest equivalent among model essays. This process of multi-reader holistic assessment is used with the English Test, the placement exam that determines which first writing class Ohio State students take.

As with analytic scoring, it is important that students are made aware of the method of evaluation and criteria in advance of their writing.

Holistic scoring has two advantages over other scoring methods:

1. *Efficiency*. Holistic scoring takes much less time to do. Each reader of a holistically scored essay reads the essay through quickly, matching its quality to that of one of the model essays. With the models or rubrics firmly in mind, a holistic grader's first impressions of an essay are highly reliable.

2. *Interrater reliability*. Holistic scoring is considered by some to be the most consistent and reliable method of scoring writing available to date.

## Other Suggestions for Grading Writing

*Peer review*. Peers can provide useful suggestions on their classmates' papers before they turn in the final draft. However, it is important to help students learn what to look for. Old essays (with authors' names deleted) on which common problems have been noted can be provided as examples of representative grading practice.

*Multiple drafts*. More than one draft of a single

paper may be useful for learning. Requiring students to resubmit encourages them to work through problems before submitting the final draft.

*Instructor comments*. How instructors comment can be as important as what they comment on. Writing specialists prefer comments on content problems phrased as questions, e.g., rather than writing "Confusing" in the margins, one might say, "I was with you until you began discussing 'active learning.' What do you mean by 'active learning'? Why is 'active learning' an important point here?" It is best not to use editor's shorthand when commenting on student papers, e.g., "Awk" for "awkward." While convenient for the instructor, this type of comment lacks explanatory power for the student. If a passage is awkward or a word choice incorrect, it is more informative to let the student know why.

*Error identification*. Instructors need not feel as though they must find every error in a student paper. One tool that some writing specialists recommend is putting some mark in the margins next to a line containing a misspelling or other minor error. This places the burden back on the student to discover the error. If the instructor identifies every error, then rather than students learning how to edit their own work, they only learn how to use the services of an editor. (It is important, however, that the students have the technical knowledge to identify the marked errors, or they will become frustrated.)

*Completion grade*. Not all writing assignments need to be evaluated. For example, instructors who assign journals often "grade" only a small percentage of the journal entries that students have been assigned to write. The rest of the entries are simply marked as completed to make sure that students are keeping up with their work. More information can be obtained from Writing Across the Curriculum (688-5865; see Appendix).

Occasionally, an instructor will have students who need additional (or fundamental) help with their writing. The University Writing Center (688-5865; see Appendix) on campus provides free tutorial services for students.

# Feedback and Grading

Providing feedback to students and collecting feedback from them are important and informative elements of teaching well. Because of the difficulties and emotions involved, most instructors are anxious about providing honest feedback, particularly when it is negative. Yet there are many mutual benefits connected with feedback. Students benefit through getting feedback on how well they are learning. Teachers benefit from course feedback through learning how well their actions are facilitating learning and what changes or additional approaches they might use to further student understanding. Institutions benefit from feedback through obtaining information on how well overall goals for students are being achieved.

Assessment activities that result in feedback range from simple classroom assessments to institutional efforts to measure change across particular program areas. In this chapter, the focus is on efforts by the instructor. The results of two main kinds of assessment activities are *formative feedback,* which is designed to provide diagnostic information to learners and their teachers, and *summative feedback,* which is used to determine final grades or other summary information. While many assessment activities provide both, it is important to be clear with students in advance about the purpose of an activity.

## Formative Feedback

Formative feedback can be an important part of the ongoing teaching process. Since feedback is essential to learning, frequent diagnostic assessment enhances the learning that will take place in a given course. Many instructors build frequent opportunities for self-checks into their teaching: they punctuate lectures with questions that call upon students to demonstrate their understanding of the topic at hand, they ask students to solve problems after watching a demonstration, or show how they are interpreting the information which they are receiving. Instructors may ask students to keep journals, to demonstrate a particular technique, or to relay their understanding to a fellow student. In most of these cases, the assessment activity is not graded and is solely to help learners understand how well they are doing and to help the teacher know how to proceed. Angelo and Cross (1993) provide an extensive inventory of classroom assessment techniques, designed to help instructors and students diagnose teaching and learning situations.

Bergquist and Phillips (1975) have identified characteristics of feedback for formative purposes:

*It is descriptive*. It focuses on an action or result rather than on personal attributes of the student. For example, instead of saying, "You are so emotional in your writing," the teacher might say, "Your argument was hard to follow, given the use of heated language."

*It is specific*. It points out particular aspects that are good or need improvement. For example, instead of saying, "Good job," the teacher might say, "Your paper was well-researched."

*It is directed toward behavior that the student can do something about*. Instead of saying, "You should have learned this in high school," the teacher can say, "It is important to know about quadratic equations before you go on."

*It is prompt*. Feedback is usually most useful when it is given in a timely fashion.

*It involves the amount of information the student can use* rather than the amount that the teacher would like to give. A few well-designed comments on a paper are more effective than a sea of red ink.

*It involves sharing information* rather than giving advice. It is helpful to let the learner decide what steps to take to remediate any problems that exist, since ownership and the probability of change are more likely than if a course of action were prescribed by another.

*It is solicited* rather than imposed. When learners ask for information about their performance, they are more likely to listen to the answer.

*It takes into account the needs of both learner and teacher*. Although teachers sometimes want to express their frustration with the results of an assignment, the needs of the learner must also be met.

*It concerns the result* rather than the reason. When teachers assume why a learner performed a certain way, they can be making false inferences that will damage the relationship. Instead of saying "You probably didn't study because of the big game," a teacher might say, "This performance is below par for you. Usually you can define terms."

*It is checked for clear communication*. It is a good idea to ask students to paraphrase feedback so that the teacher can see whether it corresponds with the message he or she intended to give.

*Constructive feedback communicates caring and honesty.* It avoids false praise and global blame.

## Providing Feedback to Students in Performance Settings

In settings such as laboratories, studios, or the field, feedback involves information describing students' performance. It is a key step in the acquisition of skills, yet feedback is often omitted or handled casually. The importance of feedback in the acquisition of skills follows from the nature of the method. These skills are more easily demonstrated than described. Feedback occurs when students are offered insight into what they actually did, as well as the results of their actions. Insights gained through feedback highlight the difference between the intended result and the actual result, thereby providing motivation for change.

There are many explanations for the problems associated with providing feedback in performance situations. The first and most obvious explanation is the failure to make firsthand observations of students' performances. Observations are the currency of feedback and without them the process becomes "feedback" in name only. Even if the data are at hand, other factors can confound the feedback process.

Central to many concerns about feedback is that it may have negative effects beyond its positive intent. The capacity of evaluation to elicit an emotional reaction is self-evident. Experiences with feedback that was handled poorly may inhibit giving or receiving feedback in the future. The teacher may be concerned that the student will be hurt by negative feedback, that it will damage the student-teacher relationship or the teacher's popularity, and that it will result in more harm than good. The student may view feedback as a statement about his or her personal worth or potential. Students may ostensibly want information about their performance but only insofar as it confirms their self-concept.

Such concerns and misconceptions often result in what is called in the field of personnel management "vanishing feedback." Anxious about the impact of the information on the student, but committed nonetheless to the need for feedback, the well-intentioned teacher may talk around the problem or use such indirect statements as to

obfuscate the message entirely. The student, fearing a negative evaluation, supports and reinforces the teacher's avoidance. The result is that despite the best of intentions, nothing of any real value gets transmitted or received. Even worse, concerns about the impact of feedback may lead to little or no feedback *during* the course, precisely when the students have the opportunity to improve their performance.

A way to approach the problem of giving feedback when performance is at issue is to construct rubrics for evaluating tasks. Rubrics are checklists or grading charts that can be developed collaboratively so that students are involved in distinguishing criteria that characterize good work and in assigning weights to the criteria. An example of a rubric to assess problem solving is provided by Woods (1994). The items on his checklist identify 12 criteria that he sets forth as characteristic of effective problem solving. Next to each criterion is a narrative description of possible student performance. The rater lists (+) and (-) signs by each item to provide feedback to the student. The first three items on this checklist are shown below:

Although creating effective feedback methods for performance areas and for such process skills as critical thinking, oral communication, and the like require creativity and careful thinking, the act of devising feedback methods forces the instructor and student alike to focus on characteristics of success, which aids the student's self-awareness of what is needed and helps the instructor be clear about what is desirable.

| Attribute | Description | Assessment |
|---|---|---|
| Awareness | + can describe processes, can distinguish "exercise solving" from "problem solving"<br><br>- unaware of process; it is intuitive; cannot define a framework for problem solving | |
| Variety of problem-solving skills | + can apply a variety of methods and hints<br><br>- knows very few techniques; attempts to use a "one step" solution | |
| Emphasis on accuracy | + checks, double checks, rechecks; concern for accuracy<br><br>- concern for speed; unwilling to check | |

*Items from Woods' (1994) Checklist for Assessing Problem Solving.*

## Summative Feedback (Grading)

At given intervals during a course and at the completion of a course, instructors often decide or are required to assign grades to students. Many instructors indicate that grading is the most difficult and anxiety-producing part of teaching. Although many construct systems designed to ensure fairness, grades are inevitably subject to value decisions and the relative framework within which knowledge is generated and assessed. Milton, Pollio, and Eison (1986) provide a frank discussion of the difficulties entailed in assigning grades. Despite their limitations, students, instructors, and prospective employers and educators tend to use grades to make decisions. McKeachie (1994) identifies some purposes for which grades are used by these interested groups: students want to be able to use grades to assist them in making decisions about possible majors and careers; instructors advising students use grades to judge whether their students have the motivation, skill, knowledge, and ability to do well in advanced courses; prospective employers and educators want to use

grades to tell whether a student is qualified for employment or further education and how well the student will do in his or her future work.

Many different types of summative evaluation may be effective depending on the design of specific course materials and goals. However, good grading methods are characterized by the following attributes.

## Validity

It is of paramount importance that the method of evaluation employed be able to accurately measure the skill or knowledge that it seeks to measure, that it be *valid*. It is also important that evaluations exhibit what is known as *face validity*. Face validity means that elements of the evaluation appear to be related to stated course objectives. It is a common student complaint that they could not perceive the connection between the evaluation and course objectives. It is therefore necessary not only that the instructor be able to make a connection between the evaluation and the course, but that the student be able to do so as well.

In addition to face validity, evaluations must have content validity. The format of an evaluation must conform closely to the course objectives that it seeks to evaluate. If a course objective states that students will be able to apply theories of practice to case studies, then an evaluation should provide them with appropriate cases to demonstrate this ability.

Finally, effective methods of evaluation have certain predictive characteristics. A student who performs well on an evaluation concerning a certain skill might be expected to perform well on similar evaluations on related skills. Additionally, that student might be expected to score consistently when evaluated in the future.

## Reliability

The concept of reliability is closely related to (and often confused with) validity. A reliable method of evaluation will produce similar results (within certain limitations) for the same student across time and circumstances. While it is understood that performances will vary, the goal is to eliminate as many sources of error as possible. Svinicki (n.d.) notes three major sources of error in reliably evaluating students:

1. *Poor communication of expectations*. It is imperative that the student understand the question or the task assigned. Poor student performance can be the result of a failure to provide clear instructions. For example, assignments should always be written to avoid any verbal misunderstanding. The results of a failure to communicate are often a poor grade given to a student who may actually have mastered the subject matter.

2. *Lack of consistent criteria for judgment*. Lack of consistent criteria for judgment exists where the basis for making the judgment is not clear. Where there are not consistent criteria, identical tasks can be evaluated differently by the same grader at a later date or by a different grader concurrently. However, if a specific set of criteria is established prior to the evaluation, error in this area can be diminished.

3. *Lack of sufficient information about performance*. A third source of error in evaluating students occurs when the instructor does not have sufficient evidence of a student's performance. It is important that the information collected reflect this performance in a variety of formats. Clearly, using a single paper submitted at the end of the quarter to determine the entire course grade would violate this principle.

## Clear Communication of Evaluation Plan Prior to Performance

Students often complain that the basis for their evaluation is unclear to them. Students' ability to "guess" what topics will be presented as a part of their evaluation and in what form is hardly indicative of their mastery of course content. Additionally, questions employed for evaluative purposes should be of the same nature and scope as day-to-day class activities and assignments. This is not to say that the evaluation must be a "regurgitation" of classwork and readings but rather that it should be within the same general framework. Not-for-grade trial tests, given early in the quarter, can be useful tools both to alert the instructor as to the students' abilities and to provide the students with an understanding of the method of evaluation that will be used.

## Realistic Expectations

As has been previously noted, the more student work available to the instructor, the more reliable

the evaluation of student learning. However, consideration must be given to the fact that students are also enrolled in several other courses that demand their time and attention. Instructors are also limited in the number and types of evaluations they can develop and administer in any individual course, while still grading and returning work in a reasonable time. Ideally, these constraints can be recognized and the best possible system of evaluation can be generated within these parameters.

# Methods of Grading and Relative Advantages

There are many methods of grading. They are all based on human judgment, although it is easy to forget this, especially when the method relies on numbers. Numeric methods are not necessarily more "objective" than those that rely on written comments or holistic approaches. Instructors find that thinking through their grading philosophy and purposes before developing a scheme is a very important step. Before selecting a grading method, it is also advisable to check if there are any relevant course or departmental policies.

## Calculating Grades

There are three basic types of grading systems: *criterion-referenced* or *absolute* systems*, norm-referenced* or *relative* systems*,* and *hybrid* (combination of *criterion-* and *norm-referenced)* systems. Simply stated, norm-referenced systems (often referred to as "grading on a curve") evaluate students' performance in relation to one another and rest on the underlying assumption that relative levels of student ability do not vary much from quarter to quarter, and that student achievement is evenly distributed. When using norm-referenced systems, however, there is a danger that the instructor will inappropriately use the grading curve to compensate for poorly constructed tests.

Criterion-referenced systems, on the other hand, apply an absolute scale against which individual student performances are measured. The setting up of such a grading scale ideally requires some knowledge of the levels of student ability likely to be present in the class. With the criterion-referenced system, it is theoretically possible for all students to receive an "A" or for everyone to fail the course. Hybrid systems, probably the most common grading schemes used at Ohio State, contain aspects of both systems. A few examples of each system and their implications follow:

## Norm-Referenced Systems

### The Simple Curve

In this system the instructor determines beforehand that a certain percentage of students will receive A's and a similar percentage will receive E's. The same holds for B's and D's. The remainder receive C's. Cut-offs are based on the number of students in the class and are figured by counting down the distribution of grades until that number is reached. Since this system involves nothing more sophisticated than counting and division, it is easy to use. However, when students know that only a fixed percentage of them can achieve A's, they often feel a sense of competition with each other. If you intend to do any sort of collaborative or cooperative group work, this form of grading can undermine your ability to get students to work together.

### The Normalized Curve

This is a more complex system in which the actual score a student earns is converted into what is called a *standard score* based on the class average and the distribution of the scores. Then, using standard tables, the instructor converts these standard scores into percentiles based on a normal curve.

The Office of the Registrar's Test Scanning and Scoring Services (292-2241; see Appendix) provides this information on all machine scored tests scanned by their office. The student's score is reported as being in the 90th percentile or the 50th, with some predetermined percentiles representing each of the letter grades. Percentile scores have some real advantages when it comes to comparing grades from a wide range of activities, but their computation and interpretation can be confusing. This method also has the same issues with competitiveness that the simple curve does.

## Criterion-Referenced Systems

### Percentage of Total Points Possible

In this system, there are a fixed number of points available to be earned. Earning 90% (or some arbitrary percent) of those points will result in an A, while 80% will result in a B and so on. Students are evaluated against a preset criterion, hence the name, and not against their peers. It does not

matter how many students reach a given level. Everyone can earn an A or an E. This avoids the issue of placing students in competition with each other, but requires that the instructor have a very clear idea of the level of achievement students are likely to reach in advance, so as to be able to set appropriate grade levels.

### Mastery, or Satisfactory/Unsatisfactory

In this case, there is only one preset level of achievement, usually based on a set of specific objectives that must be passed. If these are passed, the student moves on; if not, the student must repeat the evaluation or fail the course. Sometimes the specific requirements for the assessment of mastery refer to a given percent of the total number of skills rather than to the achievement of all given skills.

The mastery approach assigns a basic satisfactory/unsatisfactory grade to students based on their achievement of specified goals. In a mastery system, students are ordinarily allowed to take different amounts of time to accomplish a goal and to repeat tests or assignments without penalty until they achieve the desired outcome.

The advantages of this system are that the grades are meaningfully tied to the performance level, that students may achieve goals faster when they know what they are, that the focus is on success rather than failure, that student performance anxiety may be lowered, and that the system supports cooperation and may raise morale.

Disadvantages include its time consuming nature, the limit of freedom placed on teachers, and the possibility of strict prescription of means to achieve mastery. It may also discourage students from setting and meeting their own goals, and if used in a program where the whole faculty sets up performance criteria, it has the disadvantages inherent in committees.

## Contract System

A contract system of grading involves the development of a written contract between the student and the instructor that specifies precisely what will be required to achieve any given grade. The course syllabus is a good place to communicate this possibility.

Advantages of grading contracts include reducing anxieties since the student knows what is expected, minimizing the role of personal judgment in grading, and encouraging student-set goals.

The disadvantages of this system are the potential for overemphasis on quantity, possible difficulty in measuring diverse student activity, and that ambiguity may exist in qualitative distinctions between grades.

## Hybrid (Combination of Criterion- and Norm-Referenced Systems)

### Percent of Maximum Obtained

This system uses a predetermined set of cut-off percentages for each grade as in a criterion-referenced system, but bases the actual grades on the highest score achieved by a student in the class. This latter characteristic makes the grades somewhat comparative as in a norm-referenced system. The class performance plays a role in determining what is needed for each grade, but the number of students who can earn each grade is not restricted as in the norm-referenced systems. Except on the broadest level the students are not in competition with one another. This system gives neither absolute nor relative performance information, but it is easy to compute and easy for students to understand.

### Gap System

This could be labeled the "interocular" system since it involves laying out the score distribution and looking for gaps in the distribution. Sometimes, the distribution of student scores cluster in such a way that obvious breaks show where the cut-off scores for the various grades should be.

One advantage of this system is that the instructor has a practical reason for setting the grade cut-offs where they are. The idea is to identify real differences in performance that will then be reflected in the grades. Under this system, "A" performance really appears to be different from "B" performance because the two groups of students have a gap separating them. All other systems are based on more or less arbitrary cut-offs, even though they may have a sound statistical basis. Like norm-referenced systems, the gap system gives us relative but not absolute performance information. It is also easy to compute and explain.

## Self-Evaluation

Instructors can use student self-evaluation to determine part or all of the course grade. A variety of formats can be used. The significant difference in this form of grading is that the source of the evaluation is the student.

Self-evaluation can be a learning experience for the student, one that encourages them to take responsibility for their own learning. When properly coached in how to do self-assessment, students are usually fair, objective, and demanding of themselves. However, this method can be taken less seriously as the novelty wears off and is subject to abuse if students are not taught to be introspective, or if they are under extreme pressure for grades.

# Frequently Asked Questions about Grading

*How can instructors protect themselves legally when grading?*

Publish, explain, and use explicit criteria in advance. Students are much more likely to accept grades based on criteria that they are made aware of in advance and that they understand.

Document decisions as carefully as possible and be consistent. Keeping gradebooks secure and retaining them for some time after the course is over are also required by some departments. Instructors are advised to check with their departments for specific schedules concerning the maintenance of these records. Some instructors also protect themselves by keeping lines of communication open and taking the opportunity to prevent cheating when possible by making it hard to copy answers during exams, making it difficult to change corrections on returned papers, being careful to check off completed assignments, etc.

*How can instructors handle cheating when they think someone else wrote a student's paper?*
First of all, be proactive. Include an academic honesty policy in your syllabus and explain it to students. Also, design assignments that will not welcome cheating. Ask for initial parts of the assignment (i.e., topic proposal, outline, annotated bibliography, drafts, etc.) as students work. This requires that students do their own work.

If the same term paper has been assigned in Psychology 100 for five years in a row, some "oldies" with new names are likely to surface. Also, if a topic is very broad—a paper on anything in the field—it is easy to find something to submit that may not be original or intended for that course. Change and focus topics to avoid such misconduct.

If instructors do not have any out-and-out proof of plagiarism or ghostwriting, they are quite limited as to what they can do legally. They can talk with the student in question and ask them how he or she decided on the topic or found the references to determine if the suspicions are warranted, but unless this provokes a confession or demonstrates a patent lack of understanding of the topic, it is hard to take further action. Simply letting the student know that the instructor pays close attention, however, may encourage the submission of original work in the future. Some instructors attempt to avoid this situation through careful attention to assignment design and regular change of topics. Instructors with specific questions may contact the Committee on Academic Misconduct (292-7262).

There is also a variety of resources on the World Wide Web that let you track down suspected text (such as http://www.findsame.com or http://www.plagiarism.org).

*How can instructors grade on attitude, attendance, or participation?*

In all cases, instructors should specify in advance if they will be considering these factors in the final grade. It is essential to make it clear which behaviors are being targeted and what the expectations of the instructor are. Attendance is not difficult to measure, though it may be hard to document in large classes. Some instructors of such classes send around attendance sheets, while others assign very short response papers. Instructors should define "excused" versus "unexcused" absences and the maximum number of absences allowed. Instructors who choose to grade on attitude or effort will be pressed to justify decisions, so it might help to have specific criteria or tasks that will be related to the grade. Having activities that produce the "artifacts" of participation such as quizzes or in-class assignments based on required readings may be used to motivate and document student preparation and attendance.

To grade oral participation, some instructors keep a running record of contributions during discussion

sections or ask a student to do so. This puts shy or inarticulate students at a disadvantage; in order to avoid this, an instructor might ask for written comments or questions to be submitted, use electronic mail or web discussion groups, or offer other alternative modes for such participation. The two reasons students most often give for not participating in class are that they do not believe that they know the right information or that they fear that they will embarrass themselves by saying it incorrectly. Brief exercises in class can allow them to overcome both issues. If they talk or write about a concept before being asked to speak, they will be more likely to have something tested and prepared to say.

## Concluding Thoughts on Assessment

The grading system as well as the actual evaluation are closely tied to an instructor's own personal philosophy regarding teaching. Consistent with this, it may be useful, in advance, to consider factors that will influence instructors' evaluation of students. For example, some instructors make use of the threat of unannounced quizzes to motivate students, while others intentionally do not. Some instructors weigh content more heavily than style. It has been suggested that lower (or higher) grades should be used as a tool to motivate students. Other instructors may use tests diagnostically, administering them during the quarter without grades and using them to plan future class activities. Extra credit options are sometimes offered when requested by students or deemed appropriate by instructors. Some instructors negotiate with students about the methods of evaluation, while others do not. Class participation may be valued more highly in some classes than in others. These and other issues directly affect the instructor's evaluation of student performance. As personal preference is so much a part of the grading and evaluating of students, a thoughtful examination of one's own personal philosophy concerning these issues will be very useful.

## Recommended Readings on Testing and Grading

Items preceded with an asterisk (*) can be found in the FTAD resource suite.

*Angelo, T., & Cross, K. P. (1993). *Classroom assessment techniques.* San Francisco: Jossey-Bass.

Jacobs, L., & Chase, C. (1992). *Developing and using tests effectively.* San Francisco: Jossey-Bass.

*McKeachie, W. J. (1994). The ABC's of assigning grades. In W. J. McKeachie, *Teaching tips: Strategies, research, and theory for college and university teachers* (9th ed.). Lexington, MA: D. C. Heath.

*Walvoord, B., & Anderson, V. (1998). *Effective grading: A tool for learning and assessment.* San Francisco: Jossey-Bass.

# 8: Problem Situations

Occasionally, special problems enter the teaching arena. Among these are teacher-student conflict, sexual harassment, and academic misconduct. Preventing problems from occurring, being aware of university and departmental policies, behaving in accordance with them, and knowing how to find support services to assist are the keys to action under problem circumstances.

## Managing Conflict between Teachers and Students

Given the range of personal issues that are present in college settings, conflicts between teachers and students are likely to occur from time to time. Here are some suggestions for handling such situations:

- If the situation is occurring in class, it is wise to suggest to the disruptive student that the matter be handled outside class, if at all possible. Both the teacher and the student are apt to be affected by the presence of other students.
- In talking with a student about a problem, instructors should try to avoid immediate emotional responses. If the situation seems out of control, it is best to suggest a cooling-off period before trying to resolve the issue.
- One piece of advice that is frequently given in conflict situations is for instructors to mentally put themselves in the other person's shoes so that they can understand what seems to be motivating the behavior and what feelings are involved.
- It is important to define the reasons for the conflict as clearly as possible (e.g., Is the student disputing the grade or the format of the test? Is the problem really deeper than the issue or incident that is being raised?). Listening carefully and asking clarifying questions will help greatly in defining the issue.
- It helps for instructors to check to see that they have a good definition of the issues and understanding of the feelings by paraphrasing what the student has said and asking if the summary is correct. Distinguishing between major and minor points of disagreement is also important.
- Thinking of win-win solutions that will make both parties happy can be fostered if the student is asked to help generate ideas so that the problem is viewed as a shared issue. Some ideas will involve creative solutions that will meet both the student's and instructor's needs (e.g., free choice of lab partners rather than assignments). Sometimes the solutions will involve mutual compromise, such as partial credit for an answer or an agreement that the instructor will end class on time if the student promises not to start noisily packing up her things five minutes early.
- It is important that the instructor make sure reasons for taking stands are defensible. "Because I'm the teacher and I said so!" is not a good position.
- An instructor can go a long way toward reaching resolution by trying to explain his or her reasoning in a way that shows caring for the student.
- It is important to avoid side issues and stick to the main point of the disagreement.
- It is helpful to write down the agreement to enhance clarity and commitment. If writing is too formal for the situation, the student can be asked to feed back her or his understanding of the issue.
- Consistency is important after a decision has been reached. An instructor should avoid being pressured to renege or relent just to make peace. If a new solution occurs, however, the instructor can suggest reopening the conversation.
- If the instructor or the student are still dissatisfied, some campus offices can be involved to help resolve the issue. The Student Advocacy Center (292-1111; see Appendix) is an excellent resource for such situations.

- Ultimately, instructors have the right to ask a disruptive student to leave class on the grounds that the disruption is preventing the other students from learning. If the student refuses to leave and continues to disrupt, the instructor should ask another student to call the University Police (292-2121; see Appendix) for help.

- If the student appears violent or mentally unbalanced, instructors should not try to handle the situation but should refer the student to a support person (Counseling and Consultation, 292-5766; see Appendix). If the situation is immediately threatening, it is important to seek help from the University Police.

- Students who appear to have serious or complicated personal issues – such as paranoia or physical aggression – should be carefully and sensitively referred to professional help at Counseling and Consultation. Please refer to the following section for guidelines on how to do this.

# Helping Students in Distress

University life can be stressful and at times overwhelming for undergraduate and graduate students. Instructors and staff often play critical roles in identifying and interacting with students in distress. The information that follows is designed to assist in the identification of emotionally distressed students and their referral to appropriate resources on and off campus.

## General Guidelines for Assisting Students in Distress

*Observe.* Look for emotional and behavioral changes. Take note of behavior that appears strange, inappropriate, or unusual. Pay attention to both verbal and nonverbal communication.

*Trust your gut.* If you sense that something is wrong there is a good likelihood something is.

*Reach out.* Ask to talk with the student in private at a time when you can both focus on the problem and do not feel rushed. Be direct in expressing your concerns in a nonjudgmental manner based on your observations and perceptions. You do not need to have answers to student problems to reach out to them.

*Listen.* Encourage the student to respond to your concerns. Listen to both thoughts and feelings. Let the student talk.

*Offer support and assistance.* Your care, interest, and listening may prove pivotal in encouraging a distressed student to seek assistance. Help the student identify resources to address their concerns (see below). Respect the student's beliefs and values even if they are different from your own. Be candid with students about your limits to assist them.

*Instill hope.* Let the student know that things can be better.

*Consult, consult, consult.* The student may present concerns or situations that leaving you feeling "in over your head." Utilize Counseling and Consultation Service clinical staff to discuss how to best respond to the student and his or her situation. This step is especially critical when a student may need emergency care (violent or disruptive behavior, loss of contact with reality, disturbed or incoherent speech, suicidal or homicidal thoughts or actions). In these situations, it is important to (1) remain calm, (2) contact the appropriate agency and have someone stay with the student while you are doing this, and (3) stay with the student until assistance arrives.

*Refer when appropriate.* There may be situations where referral is your best option. Circumstances that may indicate referral include:

- the problem is beyond your expertise or comfort zone
- you feel too busy or personally stretched to be able or willing to help
- personal feelings about the student or their situation impair your objectivity or ability to help
- the student conveys discomfort talking to you about the problem
- the student asks for information or assistance which you are unable to provide

It is important to help the student understand your reason for referral so they do not feel that they "are too hot to handle" or that their concerns cannot be resolved.

*Follow up.* It is often helpful to arrange a time to follow up with the student after you make a referral. This helps communicate your concern and interest.

*Maintain.* Continue to maintain clear and consistent boundaries and expectations with the student in your staff or instructor role.

## Scheduling an Appointment

Students can schedule an appointment by calling Counseling and Consultation Service (CCS) at 292-5766. In most cases, it is best for students to schedule their own appointments. Students are initially scheduled for an hour intake appointment to assess their situation and offer treatment recommendations. Many students are referred for individual or group psychotherapy at CCS. Some students are referred to other campus or community resources to better meet their individual needs.

If you are particularly concerned about a student, you may encourage them to use your office phone to schedule an appointment while they are still with you. In more urgent situations, CCS makes every attempt to meet with the student the same day.

## Confidentiality

Instructors and staff are often concerned about what happens to students after they refer them to CCS. This certainly is an understandable, caring reaction. However, CCS staff adhere to legal and professional confidentiality parameters. This means that CCS:

- can answer general questions regarding the referral process
- can offer information about psychological concerns in general
- can offer consultation regarding how to approach a student with your concerns
- can take information from you about a student with whom you are concerned
- is only able to share information, including appointment attendance, with signed permission from the student
- *cannot* discuss specifics of the student's situation or treatment recommendations

## Emergency Situations

Emergency assistance should be sought when a student is acting in a manner that evidences potential harm to self or others. Contact one of the resources below, note that you are dealing with an emergency situation, and report the specifics of the situation as clearly as possible:

- University Police (292-2121)
- OSU/Harding Psychiatric Services (293-9600)
- NetCare Access (276-2273)

# Sexual Harassment

Occasional conflict between students and instructors in the area of sexual harassment is an unfortunate possibility in an instructional setting. Many instructors and students have a difficult time identifying when their behavior is sexual or when it is unwanted by the receiver of the behavior. In the best of all worlds, people who find behavior offensive should tell the offending party immediately, but very often, this does not happen.

Sexual harassment is defined more by its impact on the receiver of the behavior and less by the intention of the individual doing the behavior. Thus, it is important for people to be aware of the possible impacts of their behaviors on those around them. The Office of Human Resources (292-1050; see Appendix) has a full brochure defining these issues and also has prepared some questions and answers that may help. The OSU Procedure Manual for Sexual Harassment is available online (http://www.ohr.ohio-state.edu/policy/115pol.htm).

Below are several common questions about sexual harassment and their answers:

Q: Should instructors ever initiate or be responsive to the prospect of a personal or romantic encounter with one of their students?

A: Although university policy does not prohibit teaching staff from dating students, most departments discourage it while the teacher-student relationship is ongoing. Instructors are advised to wait until after they have turned in their grades to remove any doubts about whether evaluation procedures are fair.

Even though instructors may have cultivated an egalitarian relationship with their students—and especially with the student they are thinking of dating—they are still in a position of power over the student. The temptation to grade unfairly is difficult to resist, and even if it is resisted the perception of favoritism might still exist.

Q: Should instructors ever touch a student?

A: This depends on personal style. Some people naturally use a pat on the shoulder to convey

warmth and support. It is perhaps more acceptable if instructors touch all of their students, as opposed to only those from the group of people that they might think of dating, but if they find themselves touching only certain students, their behavior may be unintentionally sexual or perceived as such by some students. It is probably safest to avoid touching.

Another issue to consider is that some people are uncomfortable being touched in any way. Be aware of the students' body language. If a student appears stressed or is continually shifting position when touched, the instructor should move away to make the student more comfortable and not repeat the action.

Q: What are some tests that instructors can use to determine if their actions or those of others are sexual and/or unwanted?

A: Two questions that can be asked are:

1. Would I want this behavior to be made completely public? For example, would I want a television news crew there recording the behavior and showing it on the evening news or at a professional conference?

2. Would I behave this way if my spouse or partner were standing next to me? Would I want someone to behave this way to my child, partner, spouse, or parent?

Handling problem situations in teaching and learning requires tact, caution, and a knowledge of university procedures and resources that can be called upon.

## Interstudent Conflict in Diverse Environments

How should instructors respond to interstudent conflict? Jonathan Collett, former Faculty Coordinator at the Teaching and Learning Center at SUNY/College at Old Westbury, suggests the following:

1. Be proactive in trying to avoid such conflicts by setting ground rules in advance for appropriate ways to discuss and argue (see the subsection "Setting the Expectations and Establishing Ground Rules" in the section "Leading Effective Discussions" in Chapter 5).

2. Deal with conflict immediately when it appears in class. The goal is to educate and change the behavior of all students. More often this will take the form of talking to one or more students outside of class, but occasionally an obvious instance will emerge in class itself. Setting the stage early in the course with an assigned reading on multicultural sensitivity makes the later discussions easier and more natural.

3. Be willing to accept high emotions and conflict as a natural and necessary accompaniment to student-centered learning (see the film *Stand and Deliver*).

4. Be clear about the limits of your role: you are needed and can be effective as a teacher/mentor more than as a friend.

## Academic Misconduct

Academic misconduct is defined by Ohio State University Rules as "any activity that tends to compromise the academic integrity of the institution, or subvert the educational process (Rule 3335-31-02)." Examples include violation of program or course rules stated in the syllabus, cheating on tests, plagiarism, dishonesty in reporting research results, and alteration of grades or forms.

Davis (1993) reports that studies show that between 40 and 70 percent of all college students indicate that they have been guilty of academic dishonesty. While it is clear that instructors must promulgate rules clearly and enforce policies on academic misconduct, most scholars emphasize the importance of prevention. All instructors in their role as educators can help students understand how to recognize academic misconduct. One instructor, for example, gives students a simple song lyric line and asks them to paraphrase it. The results are then evaluated in terms of whether they constitute plagiarism or not. Davis recommends the following preventative steps:

- Make sure that students know how their performance will be evaluated.

- Develop a climate and group norms that support honesty.

- Learn to recognize signs of stress in students.
- Be sure that students have equal access to study materials.
- Make sure that students feel that they can succeed in class without dishonest behavior.
- Instructors can adopt such practices as assigning very specific paper topics, scrambling examination questions, having students discuss drafts of papers, and protecting exam security to make it difficult for students to cheat or plagiarize.

Instructors who suspect academic misconduct should document the situation in writing and in detail. The matter should not be discussed openly with others. Depending on unit policy, the chair may be notified or consulted before action is taken.

For more information about academic misconduct and disciplinary action (basic guidelines, procedure, and links), contact the Committee on Academic Misconduct (292-7262; see Appendix) or visit the committee's procedure web site (http://www.osu.edu/offices/oaa/procedures).

# 9: Growth as a Teacher

There are many values to an active approach to growth as a teacher. Of course it makes teaching easier and more enjoyable, as well as making one more competitive in job searches and tenure and promotion reviews. It also keeps teachers in tune with students and their needs, it can build bonds with others who are interested in teaching and learning, and perhaps most importantly, it greatly improves the quality of instruction for our students.

## The Role of Feedback in Growth as a Teacher

In Chapter 3, various sources for feedback on teaching and methods of collecting this feedback are discussed. Responding to feedback by making adjustments and improvements in the classroom, course structure, and teaching methods is often the first step teachers make in their growth. As they become more comfortable with the concept of feedback, its interpretation, and its potential for positive change, they venture to find other ways of improving. The rest of this chapter is devoted to these.

## Development of Teaching Skills

Another important component of good teaching is the active pursuit of personal development as a teacher. This pursuit can involve education, consultation, mentoring, and academic literature.

### Seminars and Workshops

Various units often sponsor discipline-specific seminars and workshops on teaching and teaching issues. Faculty and TA Development (FTAD) consultants can be asked to help plan and deliver college or departmental workshops on teaching, courses for teaching associates on college teaching, visiting lecturers on teaching, and other programs initiated by the unit. There are also a variety of offerings at the university level. Many first-time TAs participate in the Teaching Associate Workshop and International Teaching Assistant Workshop held at the beginning of the academic year. There are other workshops offered throughout the year by FTAD on a variety of topics which are open to all teachers.

### Courses for TAs

The general course on college teaching is Education Policy and Leadership 851: College Teaching, offered by the College of Education. Some units offer their own field-specific courses, which can range from a two-week introduction at the beginning of the academic year to multi-quarter series of courses. Examples of these are Psychology 851: Seminar in the Teaching of Psychology, Mathematics 735: Seminar in Teaching College Mathematics for International Graduate Students, or the 801 course for most of the modern foreign languages.

### Consultation Services

FTAD provides consultation services for faculty and TAs concerning their teaching dilemmas, successes, and planning. Services include classroom observations, videotaping, course material reviews, mid-quarter evaluation planning, and general discussion and problem-solving consultations. FTAD consultants can also help develop proposals, design studies, and implement programs on college teaching.

### Mentoring

Mentoring provides one-on-one interaction for faculty and TAs wishing to develop their skills and learn from more experienced practitioners. There are many programs for teacher mentoring throughout the university; below are just a few which were being implemented at press time. For the latest programs, please see the FTAD web site.

#### Mentoring for TAs

**Preparing Future Faculty (PFF)**
Since 1996, the Graduate School has offered the Preparing Future Faculty Program, a collaborative program between The Ohio State University and leading liberal arts colleges and universities in Ohio designed to broaden the academic and professional

horizon of Ohio State Ph.D. students. Specifically, the program offers an opportunity for approximately 40 Ohio State graduate students each year to experience first-hand the unique challenges and rewards of an academic career at liberal arts colleges through a partner relationship with a mentor-faculty member at PFF's host institutions. This mentoring program is intended to prepare our graduate students for the challenges of the evolving professoriate which increasingly includes greater emphasis on teaching and service in addition to the research role of university faculty. This program provides a capstone experience in its participants' path toward becoming professors in ways that go beyond the traditional graduate experience.

#### Graduate TA Fellows Program

The Graduate TA Fellows Program is a pilot program being implemented for the 2001-2002 academic year. Graduate TA Fellows will assist with departmental preparation and ongoing support of new TAs. They may participate in their departments' pre-academic year teaching orientation and help TAs get off to a good start. However, the central thrust of these programs will be to provide ongoing systematic teaching support throughout the academic year: TA leaders may observe and videotape TAs, provide constructive feedback, share instructional strategies, or develop and present seminars and workshops.

### Mentoring for Faculty

#### Ohio State Teaching Enhancement Program for Early-Career Faculty

Designed for junior faculty who are in the second to fifth year of their pre-tenure period, OSTEP is a year-long program that provides opportunities for participants to enhance their teaching abilities through such program elements as mentoring programs; individualized consultations on teaching; seminars, roundtable discussions, retreats, and national/regional conferences on teaching; teaching enhancement projects; and collegial interaction/collaborations with peers. All tenure-track assistant professors in their second through fifth years at The Ohio State University are eligible and invited to apply for the program. Ten participants are selected from all applicants. More participants may be selected depending on the availability of additional funding.

#### Academy of Teaching Directory

The Academy of Teaching is an organization of faculty who are past recipients of the Ohio State Alumni Award for Distinguished Teaching. Currently, a directory is being compiled of Academy of Teaching members who are willing to serve as mentors to other faculty members.

## Academic Literature

A vast array of literature on teaching and learning is available for teachers at all stages of development, from very practical and accessible information and teaching tips to technical research on all topics in pedagogy. General newspapers and journals on college teaching include *The Chronicle of Higher Education*, *Journal of Graduate Teaching Assistant Development*, *National Teaching and Learning Forum*, *New Directions for Teaching and Learning*, and *The Teaching Professor*. A large number of discipline-specific journals on college teaching also exist, such as the *NACTA Journal* [National Association of Colleges and Teachers of Agriculture], *Journal of Teaching in International Business*, *TESOL Quarterly* [Teachers of English to Speakers of Other Languages], and the *Journal of College Science Teaching*. An abridged list of other discipline-specific journals is maintained at the University of Kansas (http://www.idea.ksu.edu/papers/pdf/Idea_Paper_28.pdf). FTAD maintains a "self-help rack" of short articles on ways to improve various aspects of teaching, as well as a resource suite which contains an extensive collection of the most recent works on learning, teaching, and professional development at the college level. An FTAD consultant can help those interested with a tour of these resources, as well as providing customized literature searches on particular topics.

## Networking

Teaching at its best is a collaborative effort. Teaching is enhanced by both close interaction with students to assess their needs, views, and progress, and close interaction with other teachers, both within and outside their field of specialization to discuss their challenges, hypotheses, and successes in teaching. There are many opportunities for such collaboration available at the unit, university, and national level. In addition to the specialized groups that may exist within units, here are several other options for networking.

## Networks at Ohio State

### New Faculty Network (NFN)

Facilitated by Faculty and TA Development staff and recent participants of the New Faculty Network, these sessions follow up on the Autumn orientation for new faculty and serve as an opportunity for new faculty to exchange experiences, learn about strategies they can employ to be successful, and establish a support network. Although a general topic is pre-selected for each meeting, participants may suggest others to pursue. Current-year and other recently hired faculty are welcome to attend any session or the whole series as desired.

### Teachers' Round Table (TRT)

The Teachers' Round Table (TRT) is a discussion forum for Ohio State faculty and TAs who are interested in improving the quality of teaching and enhancing learning. There are often two sessions per quarter. Interested faculty and TAs are welcome to join the discussions at each session. Related literature is distributed at each session. Contact Faculty and TA Development for more information.

### Service-Learning Scholars Roundtable (SLSR)

The Service-Learning Scholars Roundtable focuses on improving the quality of the undergraduate experience by engaging instructors, students, and community members in community-based teaching, learning, and inquiry. Meetings are held the first Friday of each month and focus on current trends, pedagogical issues, and campus initiatives. More information on the roundtable can be found on the Ohio State Service Learning web site (http://www.service-learning.ohio-state.edu).

### Faculty and TAs of Color Teaching Network

Facilitated by Faculty and TA Development staff, the Faculty and TAs of Color Teaching Network is a special networking interest group that aims to provide an informal forum for teachers of color who are interested in developing mentoring relationships with other faculty and TAs of color.

### Commitment to Success Program (CSP) Diversity Network

The CSP Diversity Network is a contact list of teachers and administrators across this campus who are committed to the principles of multiculturalism and diversity. From this networking, it is hoped that new areas of research and community building may emerge. The list can be found on the CSP web site (http://www.busops.ohio-state.edu/webdesign/ftad/networking.html). Those interested may contact Faculty and TA Development to be added to the list.

### FTAD Quarterly Newsletter

Faculty and TA Development publishes a quarterly newsletter which lists the meetings of these groups and the topics to be addressed, as well as other teaching workshops and campus events. It also contains articles on issues in college teaching by scholars from Ohio State and other universities.

## Networks at the National and International Level

### American Educational Research Association (AERA)

AERA is concerned with improving the educational process by encouraging scholarly inquiry related to education and by promoting the dissemination and practical application of research results. AERA is the most prominent international professional organization with the primary goal of advancing educational research and its practical application. Its more than 22,000 members are educators; administrators; directors of research, testing or evaluation in federal, state and local agencies; counselors; evaluators; graduate students; and behavioral scientists. The broad range of disciplines represented by the membership includes education, psychology, statistics, sociology, history, economics, philosophy, anthropology, and political science. More information can be found at their web site (http://www.aera.net).

### International Alliance of Teacher Scholars (IATS)

IATS is composed of college and university instructors and administrators interested in teaching and learning issues. It produces publications and hold conferences on topics such as gender differences in learning, incorporating technology into teaching, encouraging critical thinking, using teaching and student portfolios, implementing group learning, and evaluating teaching. More information can be found on the IATS web site (http://www.iats.com).

### Discipline-Specific Organizations

Several national professional organizations are devoted entirely to field-specific teaching (such as the American Association of Teachers of Slavic and East European Languages or the National Science Teachers' Association) or contain formal or informal committees or panels at their national conventions which address topics in pedagogy.

## Documenting Teaching Performance: Teaching Portfolios

For teaching associates who wish to become faculty, for faculty members seeking promotion, tenure or merit increases and for all instructors who want to maintain a running record of their teaching, regular and careful documentation is a must. At the basis of any documentation system is a process for filing information that describes teaching experiences and performance. The Office of Academic Affairs issues requirements for faculty dossiers that ask for documentation of teaching from a variety of sources. Several experts (Seldin, 1997; O'Neil & Wright, 1993) have recently promoted teaching portfolios as an excellent way for instructors to reflect on their teaching as well as document their performance for others. According to Seldin, the teaching portfolio can include such things as:

- a statement of teaching responsibilities and descriptions of how each course was taught
- a reflective statement by the instructor describing teaching philosophy and goals
- representative course syllabi
- a videotape of classroom teaching
- description of steps taken to improve teaching
- description of curriculum development projects
- self-evaluation
- description of contributions to teaching in the discipline
- description of student advising and graduate committee responsibilities
- statements from colleagues or administrators who have observed the instructor's teaching, reviewed course materials, or know of teaching activities in the disciplinary field
- student evaluation data
- description of teaching honors or awards
- list of teaching presentations, publications or consulting on teaching outside the university
- samples of student work
- letters from alumni

Special teaching portfolio "Tip Sheets" are available from Faculty and TA Development.

The main characteristics of any effective documentation system are that it draw upon multiple sources of information, use multiple methods, and be appropriate to the teaching context of the instructor. Further information can be obtained from FTAD (292-3644; see Appendix).

## Recommended Readings on Growth as a Teacher

Items preceded with an asterisk (*) can be found in the FTAD resource suite.

*Angelo, T., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers*. San Francisco: Jossey-Bass.

*Brookfield, S. D. (1995). *Becoming a critically reflective teacher.* San Francisco: Jossey-Bass.

*Hutchings, P. (Ed.). (2000). *Opening lines: Approaches to the scholarship of teaching and learning*. Menlo Park, CA: The Carnegie Foundation for the Advancement of Teaching.

*Seldin, P. (1997). *The teaching portfolio: A practical guide to improved performance and promotion/ tenure decisions*. Bolton, MA: Anker.

# Appendix

## Directory of General Resources at OSU

**Academic Affairs, Office of**
203 Bricker Hall
190 North Oval Mall
Columbus, OH 43210
Phone: (614) 292-5881
TTY: (614) 292-7327
E-mail: davis.436@osu.edu
Web site: http://oaa.ohio-state.edu

**Academic Learning Lab (ALL)**
250 Younkin Success Center
1640 Neil Avenue
Columbus, OH 43201
Phone: (614) 688-4011
Email: staff@all.successcenter.ohio-state.edu
Web site: http://all.successcenter.ohio-state.edu

**American Association of University Professors**
Ohio State University Chapter
E-mail: AAUP@osu.edu
Web site: http://www.acs.ohio-state.edu/org/osuaaup/osuaaup.html

**Campus Police Department**: see University Police Department

**Center for the Study and Teaching of Writing (CSTW, "The Writing Center")**
485 Mendenhall Lab
125 South Oval Mall
Columbus, OH 43210
Phone: (614) 688-5865
E-mail: cstw@osu.edu
Web site: http://www.cstw.ohio-state.edu

- Writing Across the Curriculum (http://cstw.ohio-state.edu/wac.htm)

**Classroom Reservations**
1240 Lincoln Tower
1800 Cannon Drive

Phone: (614) 292-1616
E-mail: registrar@osu.edu
Web site: http://www.ureg.ohio-state.edu/ourweb

**Classroom Services**
11 Lord Hall
124 West 17th Avenue
Columbus, OH 43210
Phone: (614) 292-3131
E-mail: avorder@osu.edu
Web site: http://classroom.osu.edu/equip.html

108 Cunz Hall
1841 Millikin Avenue
Columbus, OH 43210
Phone: (614) 292-9776
E-mail: avorder@osu.edu
Web site: http://classroom.osu.edu/equip.html

- Equipment such as video recorders, camcorders, televisions, audio recorders, laptop computers, liquid crystal display panels, overhead projectors, film and slide projectors, and projection booth operators for large lecture facilities can be checked out with pre-arrangement or on walk-in basis. Equipment can be picked up, or delivered and set up.

**Committee on Academic Misconduct**
1110 Lincoln Tower
1800 Cannon Drive
Columbus, OH 43210
Phone: (614) 292-7262
Web site: http://www.osu.edu/offices/oaa/procedures

**Computing and Internet Consultation and Customer Services**
512 Baker Systems
1971 Neil Avenue
Columbus, OH 43210
Phone: (614) 688-HELP (688-4357)
E-mail: 8help@osu.edu
Web site: http://www.osu.edu/units/uts/serviceguide/consultation.html

**Council of Graduate Students**
208 Ohio Union
1739 N. High Street
Columbus, OH 43210
Phone: (614) 292-4380
E-mail: cgsosu@osu.edu
http://www.acs.ohio-state.edu/students/grad

**Counseling and Consultation Services (CCS), Office of**
4th Floor Younkin Success Center
1640 Neil Avenue
Columbus, Ohio 43201
Phone: (614) 292-5766
E-mail: taylor.45@osu.edu
Web site: http://ccs-server.ccs.ohio-state.edu

**Disability Services (ODS), Office for**
150 Pomerene Hall
1760 Neil Avenue
Columbus, OH 43210
Phone: (614) 292-3307
E-mail: ods@osu.edu
Web site: http://www.ods.ohio-state.edu

**Equipment Loan, Delivery, and Setup**: see Classroom Services

**Faculty and TA Development (FTAD), Office of**
260 Younkin Success Center
1640 Neil Avenue
Columbus, OH 43210
Phone: (614) 292-3644
E-mail: ftad@osu.edu
Web site: http://www.osu.edu/education/ftad

**Faculty Club**
181 South Oval Drive
Columbus, OH 43210
Phone: (614) 292-2262
Web site: http://www.ohio-statefacultyclub.com

**Health Sciences Bookstore**
0114 Postle Hall
305 W. 12th Avenue
Columbus, OH 43210
Phone: (614) 292-5731
Web site: http://www.osu.edu/bookstore

**Help Desk Technology Support Center:** see Office of Information Technology

**Human Resources, Office of**
Archer House
2130 Neil Avenue
Columbus, OH 43210
Phone: (614) 292-1050
Fax: (614) 292-6235
E-mail: service@hr.osu.edu
Web site: http://www.ohr.ohio-state.edu

**International Education, Office of**
100 Oxley Hall,
1712 Neil Avenue
Columbus, Ohio 43210
Phone: (614) 292-6101
E-mail: oie@osu.edu
Web site: http://www.oie.ohio-state.edu

**Main Bookstore**
Central Classroom Building
2009 Millikin Road
Columbus, OH 43210
Phone: (614) 292-2991
E-mail: ohiostate@bkstore.com
Web site: http://www.bkstore.com/ohiostate

**Math/Stat Lab:** see Mathematics and Statistics Learning Center

**Mathematics and Statistics Learning Center (Math/Stat Lab)**
137 Cockins Hall
1958 Neil Avenue
Columbus, OH 43210
Phone: (614) 292-3952
E-mail: rumsey@math.ohio-state.edu
Web site: http://www.math.ohio-state.edu/MSLC

**Media Library:** see OIT Media Library

**Minority Affairs, Office of**
102 Bricker Hall
190 North Oval Mall
Columbus, Ohio 43210
Phone: (614) 292-4355
E-mail: banks.4@osu.edu
Web site: http://oma.ohio-state.edu

- Office of Minority Affairs Tutoring Program: 292-0964

**Office of Academic Affairs:** see Academic Affairs, Office of

**Office of Counseling and Consultation Services:** see Counseling and Consultation Services (CCS), Office of

**Office for Disability Services:** see Disability Services (ODS), Office for

**Office of Faculty and TA Development:** see Faculty and TA Development (FTAD)

**Office of Human Resources:** see Human Resources, Office of

**Office of Information Technology (OIT)**
512 Baker Systems Engineering Building
1971 Neil Avenue
Columbus, OH 43210
Phone: (614) 292-4000
E-mail: 8help@osu.edu
Web site: http://www.oit.ohio-state.edu

- Help Desk Technology Support Center: handles questions, problem reports, service requests, and inquiries from faculty, staff, and students regarding computer hardware and software, Internet connectivity, and related topics. Mondays through Fridays 7:00 AM to 10:00 PM

**Office of Minority Affairs:** see Minority Affairs, Office of

**Office of the Registrar:** see Registrar, Office of the

**Ohio State University (OSU, "Ohio State"), The**
Columbus, OH 43210
Phone: (614) 292-OHIO
Web site: http://www.osu.edu

**OIT Media Library**
11 Lord Hall
124 West 17th Avenue
Columbus, OH 43210
Phone: (614) 292-9515
E-mail: perkins.90@osu.edu
Web site: http://classroom.osu.edu/media.html

- The library has 6,000 titles on videocassette, film, laserdisc and DVD for faculty use. Titles are available on their web site.

**Police Department:** see University Police Department (University Police)

**Registrar, Office of the**
320 Lincoln Tower
1800 Cannon Drive
Columbus, OH 43210
Phone: (614) 292-8500
E-mail: registrar@osu.edu
Web site: http://www.ureg.ohio-state.edu

- Material Distribution, 688-3051

**Room Reservations**: see Classroom Reservations

**Student Advocacy Center**
205 Ohio Union
1739 North High Street
Columbus, OH 43210
Phone: (614) 292-1111
E-mail: advocacy@osu.edu
Web site: http://www.osu.edu/units/stuaff/stuady

**Student Athlete Support Services Office (SASSO)**
350 Younkin Success Center
1640 Neil Avenue
Columbus, OH 43201
Phone: (614) 292-7088
E-mail: myers.22@osu.edu
Web site: http://ohiostatebuckeyes.fansonly.com/genrel/SASSO.html

**Student Computer Centers for Classes**
Instructors can reserve public computing sites for a course: Call 292-0608 or visit
508 Baker Systems
1971 Neil Avenue
Columbus, OH 43210
Phone: (614) 292-8400
E-mail: pcs-info@postbox.uts.ohio-state.edu
Web site: http://www.oit.ohio-state.edu/scc.html

**Technology Enhanced Learning and Research (TELR) Support Services**
11 Lord Hall
124 West 17th Avenue
Columbus, OH 43210
Phone: (614) 292-3131
E-mail: 8help@osu.edu
Web site: http://www.telr.ohio-state.edu

108 Cunz Hall
1841 Millikin Avenue
Columbus, OH 43210
Phone: 614-292-9776
E-mail: 8help@osu.edu
Web site: http://www.telr.ohio-state.edu

- Classroom Equipment / Media / Services; Classrooms / Media Centers

**Technology Users Groups**
Web site: http://www.oit.ohio-state.edu/usergroups.html

- Specific computer user interest groups that meet monthly or bi-monthly

**Test Administration and Scanning Services**
**(a subdivision of the Registrar's Office)**
820 Lincoln Tower
1800 Cannon Drive
Columbus, OH 43210
Phone: (614) 292-2241
E-mail: testing@exchange.ureg.ohio-state.edu
Web site: http://www.ureg.ohio-state.edu/ourweb/tests

- Test scanning services (Scantron)
- SEI (Student Evaluation of Instruction) information
- FYI (Feedback on Your Instruction) information

**University Child Care Center**
725 Ackerman Road
Columbus, OH 43202
Phone: (614) 292-4453
Web site: http://www.ohr.ohio-state.edu/child/childcar.htm

**University Faculty and Staff Assistance Program**
Battelle Hall, Suite 13-06-040
1375 Perry Street
Columbus, OH 43201-3177
Phone: (614) 293-2442
Web site: http://www.osumhsc.com

**University Library System**
Main Library
1858 Neil Avenue Mall
Columbus, OH 43210
Phone: (614) 292-6154 (circulation)
(614) 292-6175 (reference)
Web site: http://www.lib.ohio-state.edu

**University Police Department (University Police)**
Michael Blankenship Hall
901 Woody Hayes Drive
Columbus, Ohio 43210
Phone: (for non-emergencies): (614) 292-2121
Phone: (for emergencies): 911
E-mail: fauver.1@osu.edu
Web site: http://www.ps.ohio-state.edu

**Writing Across the Curriculum:** see Center for the Study and Teaching of Writing

**Writing Center:** see Center for the Study and Teaching of Writing

**Women's Place, The**
5046 Smith Lab
174 W. 18th Avenue
Columbus, OH 43211
Phone: (614) 292-3960
Web site: http://womensplace.osu.edu

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Works marked with an asterisk can be found in the FTAD resource suite.


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