



HPD Faculty Instructional Handbook 2018-2019

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MESSAGE TO FACULTY

This is the 24th edition of the Faculty Instructional Handbook for Nova Southeastern University's Health Professions Division. It is intended to be a faculty resource and to provide information on supportive resources at the University.

Please feel free to utilize the resources of the Department of Educational Development. We are here to help you.

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SECTION I OVERVIEW

A. VISION 2020, MISSION, AND CORE VALUES OF NSU

VISION 2020

By 2020, through excellence and innovations in teaching, research, service, and learning, Nova Southeastern University will be recognized by accrediting agencies, the academic community, and the general public as a premier, private, not-for-profit university of quality and distinction that engages all students and produces alumni who serve with integrity in their lives, fields of study, and resulting careers.

MISSION

The Mission of Nova Southeastern University, a private, not-for-profit institution, is to offer a diverse array of innovative academic programs that complement on-campus educational opportunities and resources with accessible distance learning programs to foster academic excellence, intellectual inquiry, leadership, research, and commitment to community through engagement of students and faculty members in a dynamic, life-long learning environment.

CORE VALUES

Academic excellence. Academic excellence is the provision of the highest quality educational and learning experiences made possible by academically and professionally qualified and skilled instructional faculty and staff, opportunities for contextual learning, state-of-the-art facilities, beautiful surroundings, and effective resources necessary to support learning at the highest level. Additionally, academic excellence reflects the successful relationship between engaged learners and outstanding instructional faculty and staff.

Student centered. Students are the focus of institutional priorities, resource decisions, and planning. We are stewards of student needs and advocates for student academic success and professional development.

Integrity. Integrity involves honesty and fairness, consistency in instruction, ethics of scholarship, freedom of inquiry, and open and truthful engagement with the community through effective communication, policies and practices.

Innovation. Innovation is the creative and deliberate application of teaching, research, scholarship and service for effective education, and the development of useful products or processes providing a value added to the community.

Opportunity. Opportunity fosters the possibility for anyone associated with NSU to acquire an education or an educational experience through creative, yet sound pedagogical programs.

Scholarship/Research. Research and scholarship products are disseminated and evaluated through intellectual discourse, application, assessment, and other mechanisms of the relevant peer community.

Diversity. Diversity includes, but is not limited to, race, ethnicity, culture, religion, philosophy, gender, physical, socioeconomic status, age and sexual orientation. Differences in views, interpretations and reactions derived from diversity are important. Diversity enriches a learning environment focused on preparing individuals to live and work in a global society.

Community. NSU is a community of faculty, staff, students and alumni that share a common identity and purpose and which engages with the university's external community through diverse services, clinical programs, and community-based research and resources. Our community extends into professional, intellectual, as well as geographical domains that both support and are the focus of our educational mission.

B. EDUCATIONAL GOALS OF NSU HPD

Our goal is for all graduates to be:

- Knowledgeable in the basic and clinical sciences and in the application of their principles;
- Committed to the pursuit of excellence in all of their professional activities;
- Committed to the highest standard of ethical behavior in their professional lives;
- Well-grounded in the humanistic aspects of health care;
- Well-prepared for future training in patient care, health services, teaching, or research;
- Skilled in self-education;
- Committed to continuing education;
- Aware of their roles as members of health care teams throughout their careers;
- Equipped to understand future developments;
- Equipped to be effective problem solvers in the fields of patient care and health care delivery systems.

C. EDUCATIONAL PHILOSOPHY

- All instructional activities should have stated goals and objectives.
- The curriculum must be monitored to determine if the various instructional programs enable students to meet the curriculum's stated goals.
- The educational goals, philosophy, and principles of the curriculum require on-going review and revision because of:
 - Continuing advancements in scientific knowledge.
 - Improvements in educational technology.
 - Changes in society's needs.
 - Changes in students' interests and needs.
- Each faculty member should view participation in the design, development, implementation, evaluation, and revision of the curriculum as an essential, on-going duty.
- When deemed appropriate to include new material that requires an allocation of additional time, some of the existing instructional activities must be reduced in content or deleted.
- There should be coordinated teaching by faculty from the pre-clinical and clinical disciplines in order to help students integrate knowledge derived from a variety of disciplines.
- The faculty, in the design of the curriculum and allocation of time, must assure a reasonable student workload and free time.
- There should be continuing efforts to use effective and efficient educational techniques to achieve the defined educational objectives.
- Students should have an opportunity to evaluate the curriculum (design and implementation), and this information should be carefully considered by the faculty.
- All forms of student assessment should reflect the educational objectives established for the various instructional activities.
- Evaluation of student outcomes should be designed to:
 - Ascertain whether students have acquired a satisfactory level of knowledge, skills, attitudes, and behaviors.
 - Allow for re-evaluation of content for the next year.

D. FACULTY TEACHING RESPONSIBILITIES

- To motivate and inspire students to attain a high level of knowledge and competency.
- To facilitate students' efforts to acquire the appropriate knowledge, skills, and values required for them to function effectively as health care providers.
- To improve students' learning skills.
- To teach students how to solve problems.
- To motivate students to become lifelong self-learners.
- To help students learn to function within a health care team.
- To teach students to relate to patients in a culturally sensitive manner.
- To treat students humanely.
- To serve as a role model for students whether as an instructor modeling a passion for learning, as a clinician modeling effective and compassionate patient care skills, or as a human being modeling high moral and ethical values.

E. FACULTY RESOURCES

Faculty members are encouraged to utilize the resources of the Department of Educational Development.

- The Testing Center provides a number of services including: test creation, question bank creation and maintenance, test photocopying, scoring, test analysis, gradebook maintenance, score exporting, and attendance records. For complete details of Testing Center capabilities, see the *Testing Center Manual*, which is available in the Testing Center and also online: <http://www.nova.edu/hpdtesting/forms/manual.pdf>.
- Patrick Hardigan, Ph.D., is available for in-depth explanations of assessment statistics and coaching on creating better examination questions.
- The Center for Teaching and Learning hosts a series of seminars and workshops in the fall and winter semesters to improve instructional quality. The workshops are open to all HPD faculty. In addition, the department has a collection of books, periodicals, and videos on instructional improvement available to loan to interested faculty. Additional online resources, including a series of self-directed learning modules on basic teaching concepts, are available at <http://www.nova.edu/cwis/hpdtesting/ctl/>
- The Center for Teaching and Learning offers a rapid email response system to faculty questions (Help! There's a Student in my Office!). To access the contact form, visit our website at <http://www.nova.edu/hpdtesting/ctl/services.html>.
- The Center for Teaching and Learning can host monthly book or journal clubs for any group of faculty members interested in discussing teaching and learning topics. Contact Kathleen Hagen (khagen@nova.edu or x21235) for details.
- The Center for Teaching and Learning supports faculty efforts to organize special interest groups. Contact Kathleen Hagen (khagen@nova.edu or x21235) for details.
- Faculty and students need healthy bodies in order to function at their best. NSU provides a variety of wellness initiatives designed to promote a healthy lifestyle. Among the resources is nutrition counseling, available with a physician's prescription. Faculty members wishing to take advantage of this resource should check with their health insurance plan as in many cases, this is a covered benefit. Appointments can be scheduled by calling The Student Medical Center 954-262-1270 or The Sports Medicine Clinic 954-262-5590.
- HPD Library. The Health Professions Division Library (<http://www.nova.edu/hpdlibrary>) is a student-centered learning center, conveniently located in the NW corner of the Terry and MEDLL buildings. Resources include over 13,000 print books, and access to more than 6,000 electronic journal titles specific to health and medicine. More than 200 electronic databases are available, including

journal indexing services, evidence-based resources, full text journal articles, and clinical skills and resources. Students and faculty have access to all the resources of the NSU Libraries, including 500+ online databases, 83,000+ unique e-journal titles, and 85,000+ e-books. The library provides access to resources not owned locally from libraries all over the world and fills over 250 requests for interlibrary loan/document delivery requests each month. Books from other campus libraries may be ordered online and delivered to HPD Library for pick-up.

- Liaison librarians are embedded in Canvas courses at the faculty member's request to provide course-specific links to resources and health information literacy instruction/tutorials. LibGuides are provided and updated frequently for each discipline to gather specific resources and services into one portal. Librarians will also develop individualized LibGuides for specific courses or assignments upon faculty request. Also available are reference services such as assistance in gaining access to resources, including mobile access; preparation of bibliographies and instructional media; help with educational technology; expert literature searches; journal alerting services; class and individual instruction for you and your students in searching techniques; and assistance for your students with their assignments and projects.
- The library provides a small teaching lab (10-15 students) with whiteboard and computers, including a large monitor, and a production studio with video camera and editing capabilities. 48 small group study rooms are available for students and faculty, with the 26 study rooms in the Assembly II Building available 24/7.
- HPD Library is active in researching and promoting emerging technologies, such as iPad/tablet devices and 3D printers, and in the support of research by faculty and students in conjunction with the NSU Office of Grants and Contracts.

For information on any of these services, visit the library, or call 23108 for assistance.

- For a list of other NSU departments that provide services to faculty, please visit our departmental website at http://www.nova.edu/hpdtesting/ctl/faculty_resources.html

SECTION II

COURSE

PLANNING

A. INITIAL PHASE

Consider backward planning when you begin to think about your class. Decide what you want students to be able to do by the end of the course and work backward from there.

Review the previous year's activities, syllabus, and course evaluations. These materials can be obtained from previous course instructors, department chairs, and co-instructors. Seek student evaluations of the course, course goals, and objectives; identify hours allotted to various areas; and identify the sequence of topics presented.

Changes in allotment of hours for courses sometimes require changes in content priorities. When new material is added, older, non-essential material may need to be deleted.

It is the instructor's responsibility to ensure that the instruction has been designed to fulfill the overall goals and objectives required by the course of study.

You will also want to learn as much as possible about your students. Where are they in their course of study? Incoming freshmen? Check their MCATs, GREs, GPAs, etc., previous colleges, courses of study, and hometowns. Students with two or more completed semesters? Check with previous instructors to discover group characteristics or standout individuals. (Keeping in mind there may be biases for and against.)

During the initial planning stages instructors are encouraged to keep in mind the possibility of using unconventional methods. Some suggestions to consider include the following:

- Any instructional method becomes less effective when it is the only method used. Vary how material is presented and use instructional modalities other than lecturing. Doing so can break up lectures and increase student attentiveness.
- Problem-based learning can be very challenging to students and enhance motivation to learn.
- Active learning exercises such as think—pair—share, jigsaw puzzle, or muddiest point in the lecture or questions with an audience response system (either clickers or apps using students' smartphones) foster improved understanding and retention of the material. Create time for active learning by moving basic material to Canvas.
- If your course requires a lot of memorization, provide materials students can use to drill with or direct them where to find those resources. Quizlet offers some fun ways to practice memory work with a cell phone. Add some games either in class or online to relieve drudgery.

Refer to the High Impact Teaching Strategies from researchers in Australia. Their work has discovered 10 strategies that reliably increase student learning when they are applied. For the full article, containing definitions, key elements, and effect sizes go to <https://www.education.vic.gov.au/Documents/school/teachers/support/highimpactteachstrat.pdf> (the strategies start on page 8). The authors of the report kindly allow the information to be disseminated for educational purposes.

The 10 strategies are:

Setting Goals Lessons have clear learning intentions with goals that clarify what success looks like.

Structuring Lessons A lesson structure maps teaching

Explicit Teaching

Worked Examples

Collaborative Learning

Multiple Exposures provide students with multiple opportunities to encounter, engage with, and elaborate on new knowledge and skills.

Questioning is a powerful tool and effective teachers regularly use it for a range of purposes. It engage students, stimulates interest and curiosity in the learning, and makes links to students' lives.

Feedback informs a student and/or teacher about the student's performance relative to learning goals.

Metacognitive Strategies teach students to think about their own thinking.

Differentiated Teaching are methods teachers use to extend the knowledge and skills of every student in every class, regardless of their starting point.

B. SYLLABUS DEVELOPMENT

In developing a syllabus, consider that it represents a contract between the instructor and students and also that it sets the tone for faculty/student relations throughout the course. The use of a "promising syllabus" in which the emphasis is placed not on what the instructor will do but on what the student will come away from the course with has been shown to have positive effects on student motivation and involvement. You may read a brief article on the promising syllabus at <http://chronicle.com/jobs/news/2006/08/2006082801c.htm>

A completed course syllabus should be available a minimum of one month prior to the beginning of the semester the course will be taught. If your college has a standard syllabus format, you will need to follow it strictly. Otherwise, consider using the following as an outline.

1. Course title
2. Names of all course coordinators
3. Scheduled meeting times

4. Office hours of course instructor
5. Course Description: In this section, there should be a three or four sentence paragraph indicating general topics to be covered in the course and the general methods to be used in covering them, such as lecture, laboratory, conferences, case study, and so on. This is the type of description similar to that found in the College course catalog.
6. Course Goals: The “Major Course Goals” identify broad direction. A goal is what the course intends to cover, e.g., “to cover in depth the major cardiovascular disorders” or “to introduce the principles of cell physiology of various organ systems.” There may be a single course goal stated or there may be a number of relatively independent goals.
7. Course Objectives: The “Major Course Objectives” should indicate what knowledge and skills the student is expected to demonstrate for satisfactory completion of the course. For example “to *describe* the differential diagnosis and the therapeutic management of a certain disease” or “to *analyze* the results of pulmonary function tests,” or “to *perform* a physical examination of the thoracic region.” Objectives delineate student behavior, not faculty goals or intentions. Use action verbs such as describe, list, compare, contrast, analyze, perform, etc. Please see Section 3 for how to write objectives and for a list of action verbs.
8. Subject Outline: A “Subject Outline” should be in the form of a list of the topics of the course with accompanying dates, much like a table of contents in a textbook. This permits students to scan the course content without searching through the hour-by-hour schedule. This outline should include the approximate distribution of time to be devoted to each topic. The subject outline will prove valuable to the instructor when planning assessments because the amount of time spent on a particular topic should guide the number of questions allotted to it on an exam.
9. Course Resources: These include textbooks, websites, audiovisual materials, models, laboratory exercises, and any other such materials that play a major role in the course.
10. Course Format: This section indicates the portion of the course to be spent in lectures, laboratory, examinations, and other exercises.
11. Evaluation Procedures: This component seems to draw a great deal of attention from students and faculty. NSU policy requires students to be advised prior to a course as to grading procedures that will be used in the course. This section should include the number of examinations to be used in the course and the way in which they will be weighted in assigning percentage grades. It should also include a description of the mechanisms or criteria that will be used for assigning percentage grades at the end of the course. No changes should be made in these criteria once the course has progressed. If

examinations are used solely to assign grades, students do not need to see the results of tests. However, examinations can also be used as learning tools. In that case, students must receive feedback regarding their performance on examinations. Detailed feedback and a chance to try again are helpful.

Attendance policies for HPD courses vary by college. Please check with your department chair to ensure your syllabus follows the policies of your college.

12. Course Schedule: Schedules will be distributed to the students approximately two weeks before the beginning of each semester. You may wish to include a schedule of reading assignments in your syllabus. You should notify the library of any assigned or supplemental book titles so they can have sufficient copies of books in the Reserve section for student use. Go to the library homepage (<http://www.nova.edu/hpdlibrary>), click on Services, and scroll down to “Faculty Resources.”
13. Role of the Instructor: This section should have a list of all the instructors participating in the course, plus what roles the instructors will play (lecturer, guest lecturer, laboratory director, preceptor, etc.).

Every course taught within the Health Professions Division can have a shell established within Canvas. Posting the course syllabus online through a course management system rather than making copies of it is a better use of time and resources (plus, your students can easily access it if/when they lose their hard copy). If you are unfamiliar with Canvas, you have multiple resources available to help you:

- Go through SharkLink to University Resources (left side of the screen), then under Faculty/Staff Resources, choose Izone. Once there, you will see Canvas Training options and Canvas Resources.
- Use the Faculty Support Services website at <https://www.nova.edu/portal/oit/support/sss/faculty/index.html>

1. Course Syllabus Form

1. COURSE TITLE:
2. COURSE COORDINATOR INVOLVED:
3. MEETING TIMES: DAYS: TIME:
4. OFFICE HOURS INSTRUCTOR:
5. COURSE DESCRIPTION (*Similar to catalog*)
6. MAJOR COURSE GOALS (*What course covers*):
7. COURSE OBJECTIVES (*What is expected of students or What students can expect to gain from the course*):
8. SUBJECT OUTLINE (*Topics listed*):
9. RESOURCES (*Books, labs, audio visuals, websites*):
10. COURSE FORMAT (*Methods*):
11. EVALUATION PROCEDURES (*Describe how grades are assigned*):
12. COURSE SCHEDULE:
13. ROLE OF THE INSTRUCTOR:

2. Sample Course Syllabus

- 1. COURSE TITLE:** HUMAN GENETICS
- 2. FACULTY INVOLVED:** SMITH, JOHN; JONES, MATTHEW
- 3. SCHEDULED MEETING TIMES:** MONDAYS & WEDNESDAYS 2:10-3:30 P.M.
TERRY AUDITORIUM
- 4. OFFICE HOURS, BLDG. & ROOM #**
- SMITH—FRIDAY, 3:00-5:00 P.M.
TERRY BLDG., ROOM 2101
JONES—TUES., 10:00 A.M.-1:00 P.M.
TERRY BLDG., ROOM 2102

5. COURSE DESCRIPTION:

This course explores the basic genetics mechanisms for common human genetic defects. Emphasis is placed on premarital counseling and genetic engineering. Lecture, case studies, videos, and selected readings are utilized.

6. COURSE GOALS:

The major goals of this course are to examine the most common human genetic traits and defects and to introduce the methods used to prevent and/or cope with these.

7. COURSE OBJECTIVES:

Upon successfully completing the course, students will be able to do the following:

1. Describe the genetic mechanisms for predicting abnormal human traits.
2. Analyze the results of amniocentesis and translate information for patients.
3. List potential options for correcting common genetic abnormalities.
4. Conduct a pre-natal genetic counseling interview.
5. Differentiate between those conditions considered genetic and those that are not.

8. SUBJECT OUTLINE:

1. Historical perspective of eugenics
2. Eugenic engineering
3. Gene combinations (Dominant and Recessive)
4. Common genetic abnormalities
5. Family mapping
6. Predicting outcomes from amniocentesis
7. Genetic counseling procedures
8. Sex-linked traits by genes in Y-chromosomes including color blindness, malignant freckles, Oguchis disease, retinitis pigmentosa, etc.
9. Muscle abnormalities (absence of palmaris longus muscle of forearm, absence of sternalis muscle, rudimentary muscles connected to wrong body parts)
10. Genetic changes for alopecia, pin heads, I.Q., hemophiliacs
11. Surgery to correct clubfoot, Hirschsprung's Disease, Mongolian Folds, Milroy's Disease
12. Gene interventions
13. Current gene engineering to produce treatment regimens (Interferon, E. Coli, etc.)
14. Using stem cells to change blood type and eliminate certain genetic diseases

9. COURSE SCHEDULE:

- Monday, August 15 Topic 1 – Dr. Jones
- Wednesday, August 17 Topic 2 – Dr. Jones
- Monday, August 22 Topic 3 – Dr. Smith
- Wednesday, August 24 Exam on Topics 1-3
- Monday, August 29 Topic 4 – Dr. Smith
- Wednesday, August 31 Topic 5 – Dr. Smith
- Monday, September 5 No class – Labor Day holiday
- Wednesday, September 7 Topic 6 – Dr. Jones
- Monday, September 12 Topic 7 – Dr. Jones
- Wednesday, September 14 Exam on Topics 4-7
- Monday, September 19 Topic 8 – Dr. Smith
- Wednesday, September 21 Topic 9 – Dr. Smith
- Monday, September 26 Topic 10 – Dr. Jones
- Wednesday, September 28 Topic 11 – Dr. Jones
- Monday, October 3 Exam on Topics 8-11
- Wednesday, October 5 Topic 12 – Dr. Smith
- Monday, October 10 Topic 13 – Dr. Smith
- Wednesday, October 12 Topic 14 – Dr. Jones
- Monday, October 17 Exam on Topics 12-14

3. How to Write Objectives

Objectives may be classified as either general or specific. The difference is not precise; rather, objectives exist along a continuum ranging from the most general to the most explicit. A General Objective may be likened to a course goal; a specific objective is the more limited day-to-day goal. A General Objective example: Performing clinic responsibilities in a professional manner. A Specific Objective example: Dressing appropriately.

Objectives may also be viewed as hierarchical; that is, they represent various levels of importance and specificity. If objectives are well designed, the achievement of objectives at the lower levels will ultimately lead to the achievement of objectives at the higher levels of importance.

Stating Objectives

- State objectives in terms of the changes, the observable behaviors expected in the student. (Do not phrase the objectives in terms of what the teacher must do.)
- State objectives so that they can be understood by both faculty and students.
- Limit each statement of an objective to one objective only.
- Group specific objectives under appropriate general objectives.
- Make statements of objectives fairly broad for a course, more specific for a unit or other segment, quite specific for a day's work.
- Limit the total number of objectives to a reasonable, attainable number.
- State objectives in terms of action—use verbs.
- Eliminate from statements of objectives statements concerning subject matter to be taught or how the objective will be achieved.
- Avoid the use of the following: to learn, to know, to understand, to appreciate, to develop, to like, to enjoy. Use only verbs which demonstrate observable behavior.

a. Examples of Specific Objectives

- to *differentiate* between probable bacterial and viral infections based on blood lab reports.
- given the results of a lipid profile, to *analyze* values of cholesterol, triglycerides, and lipoproteins.
- to *draw* a particular muscle.
- to *present* a case study on a typical HIV patient.
- given a suspected infected ankle, to *identify* the organism.
- to *calculate* appropriate amounts of IV morphine for part sedation in patients with various body weights.
- given a patient with bloodshot eyes, to *estimate* the extent of lubrication in a prospective contact lens user.
- to *list* three ways of correcting myopia with a one-minute time limit.
- to *identify* the cross reactions between beta blockers, alcohol, and Valium.
- to *diagnose* congestive heart failure (in 3 out of 4 cases), given a patient with severe swollen ankles and difficulty breathing.
- given an anatomical diagram, to *trace* the flow of blood from the hepatic portal vein and hepatic arteries through the liver.
- to *write* the names of the structures in the middle ear.
- to *demonstrate* how the eyes' response to various levels of illumination is regulated by both the iris and the retina.
- given a list of six symptoms, to *create* a treatment plan to address all six effectively.

b. Alphabetical Verb List

At the completion of this program the participant will be able to:

Acquire	Design	Match	Review
Adapt	Detect	Measure	Schedule
Administer	Determine	Modify	Select
Analyze	Develop	Name	Separate
Apply	Diagnose	Order	Sequence
Appraise	Differentiate	Organize	Solve
Argue	Discriminate	Outline	Sort
	between		
Arrange	Discuss	Perform	Specify
Assess	Distinguish	Plan	State
Associate	Document	Point	Structure
Build	Draw	Practice	Summarize
Calculate	Employ	Predict	Synthesize
Change	Estimate	Prepare	Tabulate
Choose	Evaluate	Prescribe	Test
Cite	Examine	Present	Trace
Classify	Expand	Produce	Translate
Collect information	Explain	Project	Use
Combine	Express	Propose	Utilize
Compare	Extrapolate	Question	Write
Compile	Formulate	Quote	
Complete	Frame	Rank	
Compute	Generalize	Rate	
Conclude	Give	Read	
Construct	Group	Rearrange	
Contrast	Identify	Recall	
Convert	Illustrate	Recommend	
Coordinate	Implement	Recognize	
Copy	Indicate	Record	
Create	Integrate	Recite	
Critique	Interpret	Relate	
Debate	Intervene	Reorder	
Define	Label	Repeat	
Demonstrate	List	Rephrase	
Derive	Locate	Reply	
Describe	Make	Restate	

c. Verb List Grouped by Bloom’s Taxonomy

In the 1950s, Benjamin Bloom, Ph.D., headed a group of cognitive psychologists tasked with the creation of a classification system for learning objectives that could be measured and observed (as opposed to subjective objectives such as *learn*, *appreciate*, or *understand*). Their work was published in 1956 under the title *The Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook I: Cognitive Domain*, and is now known as Bloom’s Taxonomy. The taxonomy ranks intellectual tasks by difficulty. Going from easiest to most difficult, the levels are Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. Within each of those levels are a number of verbs which, when performed by a student, can demonstrate his or her mastery of content at a specific level.

When designing a syllabus, instructors will find it helpful to consider what level of mastery they want their students to achieve and how they can best demonstrate it. The verb list below will help in crafting appropriate objectives.

Knowledge			Comprehension		
cite	point	repeat	associate	distinguish	locate
count	quote	select	classify	explain	predict
define	read	state	compare	estimate	report
identify	recite	tabulate	contrast	express	restate
indicate	recognize	tell	describe	extrapolate	review
list	record	trace	differentiate	interpret	translate
name	relate	write	discuss	interpolate	
Application			Analysis		
apply	illustrate	operate	analyze	differentiate	inventory
calculate	interpret	review	appraise	distinguish	question
complete	interpolate	schedule	criticize	experiment	separate
demonstrate	locate	sketch	debate	infer	summarize
dramatize	predict	solve	diagram	inspect	
employ	relate	translate			
examine	report	utilize			
Synthesis			Evaluation		
arrange	design	plan	appraise	grade	revise
assemble	formulate	prepare	assess	judge	score
collect	generalize	prescribe	critique	measure	select
compose	integrate	produce	determine	rank	test
construct	manage	prove	estimate	rate	
create	organize		evaluate	recommend	

C. TEXTBOOKS

Textbook requests must be transmitted to the bookstore on special forms the semester prior to the scheduled semester. The HPD Library has a copy of each required and recommended text. If new texts are added, please notify the library so that they can have sufficient copies of the title on reserve for student use. Go to the library's Faculty Resources link at <http://nova.campusguides.com/hpdfac>.

REQUIRED textbooks are those which the instructor insists that every student buy and have available for the course. Such a requirement may be considered when the student must give up the book during the course (for example a laboratory manual which has to be handed in), or when the entire course is taken primarily from the assigned textbook, or when most of the examination questions will be drawn from the book. It is suggested that specific reading assignments be made from required books.

RECOMMENDED textbooks are those which may cover most of the course and are good review sources.

OPTIONAL textbooks are those which can benefit the student in the particular course but are not an integral part of the course. It may be a textbook that makes good collateral reading or even one in which occasional or even regular assignments will be made.

Assigning textbooks without serious consideration and reason often disturbs students and creates havoc in the bookstore. Some textbooks are extremely expensive; if they are not used in the course, students will resent having to purchase them. That resentment may result in loss of compliance to requests to purchase other books in the future.

It is not wise to use one textbook for the preparation of the course examination questions while recommending a different textbook for students to buy.

Selecting a book for a class should be a very serious matter. The best book is not necessarily the largest or the smallest, the newest or the oldest, or by the most famous author. Textbooks should parallel as closely as possible the course being taught, covering the material in a little more depth and written in such a manner that students can easily understand them. These become the sources to which the student will go if there are any questions in the course.

The bookstore staff may be able to offer helpful information. They can tell you about student opinions and their purchasing habits. They can also tell you what books are most popular for courses throughout the country.

D. WORK OUTSIDE OF CLASS

You may also wish to prepare or locate additional materials for your students to use outside of the classroom. These materials can be exercises to help them practice mental skills to the point of automaticity or additional reading, viewing, or listening material.

1. Deliberate Practice

You have probably heard of the 10,000 hours of practice it takes to become proficient in a specific area. Your students may need direction in what and how they should practice. You can assist them by assigning exercises of increasing difficulty along with easy-to-use rubrics for them to determine whether or not they are meeting the goals of their practice sessions. Practice with feedback is termed deliberate practice, and it is considered the best way for people to improve their skills (Edwards, 2012).

For low-level skills like remembering vocabulary, you might want to create games for your students. A 2010 article by Whisenand and Dunphy makes a compelling case for using teacher-made crossword puzzles to help their students learn the massive vocabulary required of information systems majors.

References

- Edwards, O. W. (2012). Deliberate practice to advance teaching and learning of college-level applied skills. *American Journal of Educational Studies*, 5(1), 41-50.
- Whisenand, T. G., & Dunphy, S. M. (2010). Accelerating student learning of technology terms: The crossword puzzle exercise. *Journal of Information System Education*, 21(2), 141-148.

2. Supplemental Material

You may wish to provide your students with additional materials not directly required in your class for either enrichment or remediation. Some of your students may welcome the opportunity to delve more deeply into a subject that interests them; some of your students may come to your class not fully prepared. For the unprepared student, you may consider creating a list of resources to bring him or her up to speed so that your class time is not spent reviewing material that should already be known. One way to serve both purposes is the creation of reading lists.

Reference lists or bibliographies are frequently used as handouts. Such a list can be useful to help learners pursue the subject matter of the session after it has concluded. Whatever the intention of the participants, there is some question about the extent to which these references are actually used. Their use probably relates to the ease with which the references can be located. For this reason, most of the references included on

reading lists should consist of those that participants can locate easily. There is no point in listing a speech you heard two years ago—unless it is available in print, on tape, or on YouTube—and then the source should be noted, ideally as a URL. Other significant references may be included for the person who wishes to pursue an in-depth study of the topic.

References should be carefully reviewed before including them on a reading list. Prune the list carefully so that it is not overwhelming. If an article is merely repetitious of others, rather than expanding on the subject, it needn't be included. If you list more than 20 titles, your students may feel overwhelmed. Due to the continually changing nature of medical research, listed items should be fairly recent, except for references that may be considered classic or are included for their historical value. Reference lists should be updated frequently. Use care to list items accurately so readers can locate materials easily.

References are more likely to be read if the speaker refers to them during the session, and encourages participants to read them. Sometimes it is also appropriate to explain where specific references may be found.

Although annotated bibliographies take longer to prepare, comments about each reference listed may be useful to help learners decide what materials may best serve their purposes. Annotation may also stimulate learners to seek references they may otherwise have overlooked.

The HPD Library staff members have assembled groups of resources on topics helpful to all HPD students (e.g., writing guides, how-to's for database searches, etc.) and resources specific to each HPD program. Faculty should show their students where these resources can be accessed and encourage their students to use them. Go to the HPD library homepage (<http://www.nova.edu/hpdlibrary>) to see the resources for your program. In addition, the HPD Library provides several thousand online journals as well as assistance in preparing bibliographies, instruction for you and your students in searching techniques, journal alerting services, and gaining access to resources. Call the Reference Desk (954-262-3108 or 800-541-6682 ext. 23108) for help, text them at 954-526-9218, or e-mail hpdref@nova.edu. They are also available on Twitter and Facebook.

SECTION III
INSTRUCTIONAL
MEDIA

A. PLANNING FOR INSTRUCTIONAL MEDIA

The course instructor should assess the need for instructional media during the planning stage of the course. She/he should consider the following recommendations:

- The best time to assess needs for instructional media is in the planning stages of the course. As a topic is specified, consider how best the information could be imparted: Would graphics help to illustrate key points? Are videos better than still pictures? Is a photograph or a drawing a better tool? Also consider class and auditorium size. For example, although a handheld model might work well for a small class, it would not be appropriate for a large class unless several copies were available. (Or consider making several copies on one of the HPD Library's 3D printers.)
- Consider taking an instructional media class offered through the Fischler College of Education. You will learn what makes certain kinds of media effective in which situations, and you will develop some skills for creating your own media (or, at the least, you will have a better sense of what you want).
- As needs are identified, the HPD Library can help you locate appropriate media. Go to the library homepage (<http://www.nova.edu/hpdlibrary>), click the tab for Search Library Catalog, and enter your search term in the text box. The catalog can be searched for books, journals, and media by keyword, title, author, and subject.
- The LibGuide for Osteopathic Medicine: Atlases, Cases, Sounds, and Images (<http://nova.campusguides.com/c.php?g=111846&p=725642>) lists a wealth of atlases, cases, sounds, and images. Here are just a few:
 - *AMA Atlas of the Human Body*
 - *Anatomy and Physiology*
 - *Auscultation Assistant*
 - *The Big Picture Book of Viruses*
 - *Diagnostic and Interventional Imaging—Interesting Case Files*
 - *Digital Journal of Ophthalmology*
 - *eSkeletons*
 - *The Eye Pathologist*
 - *Frontiers in Bioscience: Normal and Abnormal EKGs*
 - *Medstudents' Heart Sounds*
 - *SkillStat*
- If appropriate media are not available in the library, there are a number of websites offering educational media (some at no charge). One of the largest online collections is located at <http://www.merlot.org/merlot/index.htm>. YouTube is an excellent source for instructional videos, some produced by faculty, some by students.

- The IZone can create media for you if given enough time. Learn more about the IZone's digital media capabilities at <http://www.nova.edu/izone/multimedia/index.html>. When you are ready to request the IZone's services, use NSU's Service Manager (the purple icon should be on your computer's desktop) and then click on the OIIT Intake Requests link on the left side of the page to begin the process.
- PowerPoint slides or other audiovisual materials should be examined for quality prior to the class. It is helpful to have a colleague observe the presentation and offer feedback. If you have been using the same slides for a number of years, make sure the information is still current before using it in class. Presentations' appearance, not just the content, can become dated. Consider using some of the excellent designs and templates offered free of charge from the Duarte Studio's *Slidedocs*, available from <http://www.duarte.com/slidedocs/>
- There are a number of tools available to instructors to make video content more interactive. The Online Learning Consortium provides journals and white papers on online learning. Visit their site at <https://onlinelearningconsortium.org/read>
- No slide presentation should last more than 20-25 minutes without a break. Fifty-minute slide presentations can be broken up with a 10-minute question and answer period in the middle and possibly another at the end of the session.
- Kaltura, a tool to record lectures, screens, or webcams, is available to faculty. Recordings can include audio/video clips, web-cam images, PowerPoint presentations, document camera scans, annotations on a whiteboard, and display websites or links at selected points in the lecture. Lectures can be recorded from your desk or in an auditorium.

B. POWERPOINT PREPARATION DEPENDS ON HOW SLIDES WILL BE USED

For in-class presentations

- Avoid crowding a slide with text. The lines should be short with no more than six words per line, no more than six lines on a page.
- Use a point size large enough to be read by the students sitting in the last row of the auditorium.
- Always use a horizontal slide format (landscape orientation). For vertical images, push to one side of the slide and add another picture, cartoon, or text on the opposite side.
- Do not mix styles, lettering types, or colors indiscriminately. A border or patterned background is not essential.
- Avoid excessive detail on slides.
- Consider adding a photograph that captures the emotional content of the message you are giving. Bringing forth the emotional content of a message can help even dry material be more easily remembered by your students. Photos of people will evoke more emotion than will photos of objects.
- Try your slides out in the auditorium in which you will present to discover if the colors you have chosen project well. Not all projectors will display colors the same as they appear on your monitor. Dark blue or black background with light lettering or white background with black lettering is always safe.
- Keep animations to a minimum—they quickly become distracting.
- When talking about information on slides, try to go in sequence and, if possible, left to right and top to bottom. Skipping around on slides is confusing to your students.
- Ask for help with creating audiovisual materials. The University periodically offers workshops that teach the skills needed to make PowerPoint slides. The IZone can also create material for you.

For at-home viewing on a computer

- Add some interactive content (such as quizzes or links to videos) to keep students engaged.
- Add voice-over audio or annotations to images or graphics to explain what is being shown.
- Let text-heavy slides speak for themselves. Do not read slides to your students.

- Consider adding hypertext links to allow students to dig more deeply into material they find interesting or confusing.
- Use a table of contents and title slides (e.g., Chapter 1, slides 2-20) to break up large slide decks into more manageable chunks.
- Use white space to break up dense blocks of text.

In 2017 Dave Paradi, author of *Present It so They Get It*, surveyed 439 people to find what they found most annoying about the PowerPoint presentations they see. Survey respondents were asked to pick their top three annoying characteristics from a list and were encouraged to write in any other characteristics that might not have been listed. The results are below. The full article may be accessed at http://www.thinkoutsidetheslide.com/articles/pptsurvey_article.htm.

Rating the Annoying Elements

The speaker read the slides to us	67.8%
Full sentence for text	51.6%
Text too small to read	49.3%
Visuals too complex	33.3%

Themes from the Comments

Three common themes emerged from the free-form comments:

- Presenters need to improve their PowerPoint skills.
 1. Use the Slide Master to create slides with a consistent look.
 2. Use the animation feature to build content on the slides instead of displaying everything at once. Don't use goofy animation.
 3. Use graphs or diagrams appropriately. Make them clear.
 4. Use Slide Show mode and not Edit mode.
 5. Make sure your multimedia inserts work every time.
- Presenters need to take the time to prepare a clear message.
- Presenters need to take the time to prepare to deliver the presentation

Paradi's website contains a number of how-tos to improve PowerPoint skills and presentation skills. I'd like to recommend this one on making text more visually appealing. http://www.thinkoutsidetheslide.com/issue-340-june-23-2015/?utm_medium=website&utm_source=MakeTextVisualArticle&utm_campaign=Survey2015

C. HANDOUTS

Handouts are often called “throwaways” by cynics, but this may be because they are often overused or inappropriately used. It has become such a common practice to use handouts as a component part of every education offering that when they are not distributed, learners may feel cheated. Yet the indiscriminate use of such materials does not contribute to learning and only adds to paper pollution.

Handouts may include a wide range of printed or duplicated materials: outlines, charts, graphs, diagrams, cartoons or drawings, leaflets or pamphlets, reprints, reference lists, and copies of papers to be presented. They may be prepared by speakers or may consist of printed materials secured from a variety of sources. With a handout, each learner is provided with the same content, assuring a common experience. They can be used to provide information that may be difficult to obtain otherwise.

Uses

Handouts should be designed to encourage learners to do something that will aid their understanding of the content. For example, if a handout is used to complement a lecture, an outline of the lecture content should be designed with enough space for learners to take notes. Quizzes or puzzles are designed to stimulate interest in the presentation or to clarify certain aspects of the content. Learning exercises are planned to encourage individual thought or group problem-solving.

Each item should be carefully considered for its use as a handout and relate directly to the content of the presentation. Too many materials may be confusing to learners. Also, they may be distracting to learners who read or leaf through the materials instead of listening to a presentation. Too much information on handouts can result in students not taking notes. Consider purposefully omitting some information and having students fill it in during lectures. Use any technique you can think of for getting students to think rather than being a tape recorder.

Logistics

Supplementary materials that may be useful to the learners but do not relate directly to a speaker’s presentation are better distributed online, where students can choose to print out or refer to only those items they feel will be useful to them.

For most purposes, but especially for classes larger than 40 students, it is better to put handouts online in advance of a presentation, rather than distributing them during a speaker’s presentation. If that is not possible, arrange handouts in advance and place them in individual packets for each learner. This assures that each learner gets a copy and reduces unnecessary distractions and confusion during the presentation.

When a large number of different materials are required for the learning experience, it is less confusing if they are arranged in packets in the order in which they will be used. It is also helpful if they are numbered or color-coded, that is, outlines in white, references in blue, and so on, or the first speaker's handouts in white, the second's in pink, etc. This permits learners to find the appropriate item quickly as each speaker refers to it.

Selecting and Designing Materials

- Make an outline of important points to be covered.
- Organize content carefully.
- Use a logical sequence.
- Avoid lengthy written explanations; the handout is a guide.
- Use more than one handout in preference to a lengthy one, if there is a logical way to divide the content.
- Ask a colleague to critique a draft of the handout before using it.
- Students prefer very detailed handouts, but learn better with partially completed or bare bones handouts.

SUGGESTED READING

Huxham, M. (2010). The medium makes the message: Effects of cues on students' lecture notes. *Active Learning in Higher Education*, 11(3), 178-188.
doi:10.1177/1469787410379681

Larson, R. B. (2009). Enhancing the recall of presented material. *Computers and Education*, 53, 1278-1284. doi:10.1013/j.compedu.2009.06.010

Purposes Served by Handouts

1: to indicate the objectives of a course

In the early years of medicine, students have to begin to understand that which is embodied within a variety of new disciplines—and how these disciplines are important in their future careers. Such an orientation can be given by an initial lecture. However, throughout the course students need a clear idea of what is expected of them and, particularly, to what level they need to master the subject. A handout can provide a clear statement of objectives of a course which provides a guide to students enabling them to focus their energy appropriately and to monitor their own progress through the course. The advantage of such a handout is that it can be constantly referred to by students as they have to make decisions related to organizing their work.

2: to provide a guide to a lecture

Handouts can also be used as a guide to a lecture. If a handout which provides the main headings and sub-headings to be covered is distributed before a lecture begins, the student has the opportunity to obtain an overview of the whole topic to be covered before any individual aspect is covered. Student note-taking is then more likely to be accurate and orderly, and “losing the thread” for a short time does not throw him or her into disarray. Handouts used in this way should leave space for note-taking or simply provide a selection of headings and leave students to take notes in the usual way.

Provided the teacher is not using the gradual building up of a diagram as a definite teaching technique, handouts used in this way can also include complex diagrams which are to be used in a lecture. Needless to say, using handouts as a guide to a lecture necessitates the teacher following a prescribed path. However, some teachers may feel that such handouts restrict their lecture too much and that they lose their freedom to adapt to signs from students who are not following or are finding a particular area difficult to deal with.

3: to provide basic information

As medical knowledge continues to expand rapidly, teachers find it difficult to present basic information in a discipline, and at the same time introduce more complex issues and problems related to the discipline. Handouts can be used to provide students with some basic information on a topic before a lecture in order to free the teacher to either develop the more complex aspects of the discipline or to “free wheel” around the interesting issues in the discipline. Naturally the use of handouts in such a way requires that students read them. Consequently, students need time to adjust to such a teaching format, as using handouts only once or twice in this way can lead to confusion if the necessary guidance has not been given and reading has not been done.

4: to save note-taking, but not replace it

Providing handouts has the advantage of allowing students to think about the content of a lecture as it progresses, which some students find difficult if they are too busy recording what is being said. Although researchers are still trying to find the ideal balance between

blank sheets and complete detail, it appears that outlines with sufficient space for students to add their own comments and with some blanks for key words to be written in keeps students actively involved during the lecture.

5: to indicate new vocabulary

It is sometimes said that medical students have to learn a new language when they enter medicine. Certainly they master a vast new vocabulary in order to deal with new facts and concepts. For each course a list can be prepared giving the terms and definitions students will encounter during the course. Students can then be told that they are expected to be familiar with the new terminology by a specified week of the course. The use of handouts in this way enables students to follow the direction of lectures more easily and reduces the information overload created by having to learn both a new vocabulary and a path through a new discipline.

For additional reading on reducing information overload for students, please read *Strategies to Help Students Cope With the High Information Flow in World Regional Geography Courses* by D. E. Heath (2003) ERIC, ED477601.

6: to set the scene for exploring emotions and attitudes

An extension of the previous purpose is to provide a stimulus for students to explore their emotions and feelings. For example, a patient's case can be presented in which a number of medical intervention options are possible, each having different ethical considerations. Students can then discuss their individual responses and views.

7: to set out a problem for discussion

Discussion of problems in small groups is often chosen as a way of developing higher-level intellectual skills. Two of the determinants of how much learning takes place in a small group are the time available and how the problem is presented. A handout can be given prior to a tutorial which sets the scene for productive discussion. For instance, some basic and previously covered information can be summarized in a brief synopsis. Then a problem case can be presented. Finally one or more questions which are to be used as the basis for discussion can be posed in the handout. Students can be told to think about the questions before the tutorial and, if they wish, to read more on the topic. Provided the questions are well-thought out, the scene has then been set for a problem-centered discussion. The students are less likely to sit silently having forgotten everything about a topic (since it is still in front of them), and, over a period of time, can get used to exploring and clarifying ideas in the tutorial.

D. VIDEO

Instructors are increasingly turning to short videos posted online to provide students access to brief bits of information helpful for late night study sessions or test preparation. A 2-3 minute video is just the right length for a student to review a particularly tricky concept without becoming overwhelmed. Faculty members have a variety of ways to provide that kind of resource.

For faculty who do not want to create their own media, they can

- search YouTube, which has a plethora of educational material
- check with the HPD Library's collection of medical videos
- work with Digital Media Services (a branch of the IZone) to create professional videos.

For faculty members who want to create their videos, they can

- request studio time in the HPD Library, which maintains a studio with high-quality video recording equipment
- film themselves at their desk using their computer's built-in webcam
- get software for screen capture, both still shots and videos of anything on your computer screen (SnagIt is a free download, or check with OIIT for their recommendations.)
- use their cell phone's built-in video camera for on-the-fly recording.

E. AUDIO

Perhaps even more helpful than videos are audio recordings of lectures or mini-lectures that students can listen to while doing other things. You can purchase a headset-microphone to go with your computer for around \$50 (or ask your department buy one for you). Your students will appreciate being able to take you with them wherever they go, and you will be rewarded with their gratitude (possibly) and higher grades.

Try to make each audio file a single topic and give the file a descriptive name so students can easily choose the recordings most relevant to them.

If you make recordings in your office, put a “Recording in progress. Do not disturb.” sign on your door.

Remove any ticking clocks, mute your phones, and turn off any alarms. You will be frustrated if your perfect take is ruined by unexpected noise-makers.

If you wish to make higher quality audio recordings, spend money on a higher quality omnidirectional microphone that goes on your desk. You can also spend time editing your audio files with free software from Audacity.

**SECTION IV
IN THE
CLASSROOM**

A. BASIC CONCEPTS

Teaching is a learned behavior. Some people may be born great teachers, but the majority of great teachers spent years developing those seemingly effortless performances.

Teachers have options. There is no single right way to teach well, and students can learn from a wide range of teacher temperaments.

Your belief in the function of a teacher will make a big difference in how you structure your class and prepare for it.

If you feel a teacher's function is to discover the best students and fail weaker students, then you may develop very rigorous tests, but be somewhat unconcerned about students' performance on them. You may view student performance as strictly their responsibility. You may be less interested in developing strategies to improve comprehension and performance for borderline students.

If you feel a teacher's function is to present material, then you will probably spend a lot of time crafting good lectures and detailed PowerPoint presentations. You will work on your delivery and will likely improve your oratorical skills. You may become frustrated with the limited time you have to cover material.

If you feel a teacher's function is to help all students learn, you will likely become fascinated by "why your students fail to learn that which you are teaching them so brilliantly" (quote from William Perry). That fascination will lead to trying to understand your students better and trying to see the material you are trying to teach them from their point of view.

Options = Knowledge + Skill.

Role Models Help.

Teach = Manage learning.

Delivery makes a difference.

Evidence-based Teaching

There are a number of resources for developing an evidence-based approach to teaching. I highly recommend the 25 principles of learning found on page 260 of *Journal of Educational Psychology*, volume 101, pages 259-261, 2009, by A.C. Graesser.

Maria Svinicki's series of articles in the *National Teaching and Learning Forum* in 2015 are excellent. In particular, I like "The Goldilocks principle: 'Just right' and beyond." Volume 24 number 4, pages 11-12. The Center for Teaching and Learning subscribes to the newsletter, so please drop by if you would like to read an article or issue.

The *Ask the Cognitive Scientist* column in the journal *American Educator* by the American Federation of Teachers can usually be accessed online at no charge. The author of the column, Daniel Willingham, also maintains a website with some of his more popular columns at <http://www.danielwillingham.com/articles.html>. If you enjoy his writing, you may want to read some of his other books, such as *Why Don't Students Like School?: A Cognitive Scientist Answers Questions About How the Mind Works and What It Means for the Classroom*.

Another excellent source for information on how students learn is *How Learning Works: 7 Research-Based Principles for Smart Teaching* by Susan A. Ambrose, Michael W. Bridges, Marsha C. Lovett, Michele DiPietro, and Marie K. Norman.

TELL ME

I FORGET

SHOW ME

I REMEMBER

INVOLVE ME

I UNDERSTAND

B. EXCELLENT INSTRUCTION

CHARACTERISTICS OF GREAT TEACHERS:

1. **A great teacher respects students.** In a great teacher's classroom, each person's ideas and opinions are valued. Students feel safe to express their feelings and learn to respect and listen to others. This teacher creates a welcoming learning environment for all students.
2. **A great teacher creates a sense of community and belonging in the classroom.** The mutual respect in this teacher's classroom provides a supportive, collaborative environment. In this small community, there are rules to follow and jobs to be done and each student is aware that he or she is an important, integral part of the group. A great teacher lets students know that they can depend not only on her, but also on the entire class.
3. **A great teacher is warm, accessible, enthusiastic and caring.** This person is approachable, not only to students, but to everyone on campus. This is the teacher to whom students know they can go with any problems or concerns or even to share a funny story. Great teachers possess good listening skills and take time out of their way-too-busy schedules for anyone who needs them. If this teacher is having a bad day, no one ever knows—the teacher leaves personal baggage outside the school doors.
4. **A great teacher sets high expectations for all students.** This teacher realizes that the expectations she has for her students greatly affect their achievement; she knows that students generally give to teachers as much or as little as is expected of them.
5. **A great teacher has his own love of learning and inspires students with his passion for education and for the course material.** He constantly renews himself as a professional on his quest to provide students with the highest quality of education possible. This teacher has no fear of learning new teaching strategies or incorporating new technologies into lessons, and always seems to be the one who is willing to share what he's learned with colleagues.
6. **A great teacher is a skilled leader.** Different from administrative leaders, effective teachers focus on shared decision-making and teamwork, as well as on community building. This great teacher conveys this sense of leadership to students by providing opportunities for each of them to assume leadership roles.
7. **A great teacher can “shift-gears” and is flexible when a lesson isn't working.** This teacher assesses his teaching throughout the lessons and finds new ways to present material to make sure that every student understands the key concepts.
8. **A great teacher collaborates with colleagues on an ongoing basis.** Rather than thinking of herself as weak because she asks for suggestions or help, this teacher views

collaboration as a way to learn from a fellow professional. A great teacher uses constructive criticism and advice as an opportunity to grow as an educator.

9. **A great teacher maintains professionalism in all areas**—from personal appearance to organizational skills and preparedness for each day. Her communication skills are exemplary, whether she is speaking with an administrator, one of her students or a colleague. The respect that the great teacher receives because of her professional manner is obvious to those around her.

Reprinted from “Nine Characteristics of a Great Teacher” by Maria Orlando in the January 14, 2013 edition of *Faculty Focus*. The complete article is available at <http://www.facultyfocus.com/articles/philosophy-of-teaching/nine-characteristics-of-a-great-teacher/>

Qualities of Excellent Instructors as Identified by Students

Assertive. This instructor defends their beliefs in the classroom, has a strong personality, and is independent, competitive, and even forceful or dominant.

Responsive. This instructor is compassionate, sympathetic, helpful, sincere, friendly, warm, and sensitive to the needs of students.

Clear. This instructor presents knowledge in a way that students understand, answers questions clearly, has clear course objectives, and is straightforward in lectures.

Relevant. This instructor uses examples, explanations, and exercises to make course content relevant to students' career and personal goals or needs.

Competent. This instructor is an expert in their field, is intelligent, and is well trained in instruction.

Trustworthy. This instructor is honest and trustworthy to students, works under a set of morals and ethics, and is genuine.

Caring. This instructor cares about their students, understands their students, and has their students' best interests at heart.

Immediate. This instructor smiles at students, uses expressive hand and facial gestures when lecturing, nods their head in understanding when students talk, makes eye contact with students when lecturing, and changes vocal tones when lecturing.

Humorous. This instructor uses humor in the classroom frequently, they are funny, and they easily incorporate jokes into lectures.

Discloses. This instructor reveals an appropriate amount of positive information about themselves during lectures, when doing so is relevant to the topic being taught.

Goldman, Z. W., Cranmer, G. A., Sollitto, M., Labelle, S., & Lancaster, A. L. (2017). What do college students want? A prioritization of instructional behaviors and characteristics. *Communication Education*, 66(3), 280-298. doi: 10.1080/03634523.2016.1265135

How to Avoid Being a Jerk in the Classroom

Hara, B. (2010, August 25). How to avoid being a jerk in the classroom. *The Chronicle of Higher Education*; Prof Hacker.

1. **Having a bad day?** Car didn't start this morning? You spilled your Starbucks on the way to work? Your spouse is divorcing you? Your dog died? Your life is not your students' problem. Don't be a jerk and take your frustrations out on them.
2. **Do you have course policies for your students (attendance, tardiness)?** Then abide by the same rules. Don't be a jerk and saunter into class at five minutes after the hour (when classes start on the hour) because, after all, "they will wait for you."
3. **Do you have a policy that you don't accept late work from students?** Don't ask students to do anything you can't do, then get mad at them for being unable to do what you asked. "The worst are professors who go nuts about due dates but who themselves are continually asking for extensions from editors and colleagues," via Doug Hesse.
4. **Do you have a Ph.D. (or other terminal degree)?** It probably got you the job you now hold, but it's not something to wield over innocent undergrads (or graduate students, for that matter). The Ph.D. means that you know things. OK, move along. Don't be an insufferable jerk and tell students that your degree allows you to treat them any way you wish.
5. **Remember when you were a student?** You haven't always had that Ph.D.; try to remember what it was like not to know something. (via Seth Kahn).
6. **Do you have a rockin' personal life?** ("Member of the glitterati" is what your friends call you!) Then keep it to yourself. Sharing a little of our personal lives can be a good thing in the classroom. Over sharing, on the other hand, breeds resentment. Do students really need to know that you are late with your car payment, that you need a medical procedure (again), or that at the club last night you hooked-up with Ms./Mr. Right Now? Don't be a jerk.
7. **Do you use humor in your classes?** Great! . . . Don't let your students be the butt of your jokes. Ever. (via Annie Bullock).
8. **Do you ever make mistakes in your classes?** Admit it, apologize (especially if the mistake was aimed at students), and move on graciously. Don't be a jerk; learn to laugh at yourself. (via Risa Gorelick-Odom).
9. **Do you assign work for students to do outside of class?** Then return it in a reasonable amount of time, says Barbara L'Eplattenier. Students work hard (usually) and they want to know how they did. Don't be a jerk and make them wait weeks and weeks for feedback because you "just can't bear to read that crap."
10. **Do you say things like "I can't bear to read that crap" about student effort?** Maybe another line of work would suit you better? "Don't talk (*&&^t about your students outside of the classroom. That attitude is harder to switch off than some teachers seem to think. And the rest of us don't want to hear it anyhow," via Mike Garcia.

So, how do you avoid being a jerk in the classroom? It's really quite simple, and it's something we all learned in grade school: the golden rule, or the ethic of reciprocity. Remembering the four tenets of the ethic of reciprocity (kindness, compassion, understanding, and respect) go a long, long way in keeping us from exhibiting jerky

behaviors. Treat students with kindness. Understand that they are often young and inexperienced in your discipline. Know that they will make mistakes and that's how they will learn. Remember what it was like when you were a student. Did your professors make you suffer through boorish behaviors? There's no reason to continue that tradition. Respect what the students bring to the classroom, as it's rich and interesting. Remember, they are looking to you to be the model of professional behavior. Or, to put it simply: students look to you to be the grownup.

C. PREPARE FOR INSTRUCTION

When preparing for instruction, faculty members often begin by considering what they want their students to be able to do when they leave the class, or what kind of instructional techniques might be best applied to help their students learn, or what kind of assessment strategy should be used to determine whether students have mastered the material in the course. However, even before that, it is profitable for an instructor to consider the roles of teacher and student and delineate the responsibilities of each.

“You can lead a horse to water, but you can’t make him drink” is a well-known adage often used to describe the student/teacher relationship. Teachers can become frustrated with their students’ disinclination to “drink of the water of knowledge.” The instructor can try threatening their students, cajoling them, holding their heads under the water. These techniques may work in the short term, but a better strategy is to add salt to the horse’s oats. That way, the horse is thirsty and eager to drink. (Weimer, 2002).

Weimer, M. (2002). *Learner-Centered teaching: Five key changes to practice*. San Francisco, CA: Jossey-Bass.

Teachers can also help their students have a better sense of whether or not they understand something. The following is a reprint of an article that appeared in the “Ask the Cognitive Scientist” column by Daniel Willingham, Ph.D., of the Winter 2003-2004 issue of *American Educator*. *American Educator* permits articles to be reproduced for noncommercial personal or educational use.

Question: Very often, students will think they understand a body of material. Believing that they know it, they stop trying to learn more. But, come test time, it turns out they really don't know the material. Can cognitive science tell us anything about why students are commonly mistaken about what they know and don't know? Are there any strategies teachers can use to help students better estimate what they know?

Answer: There are multiple cues by which each of us assess what we know and don't know. But these cues are fallible, which explains why students sometimes think that they know material better than their classroom performance indicates.

* * *

How do we know that we know something? If I said to you, "Could you name the first President of the United States?" you would say, "Yes, I could tell you that." On the other hand, if I said, "Could you tell me the names of the two series of novels written by Anthony Trollope?" you might say, "No." What processes go into your judgment of what you know? The answer may at first seem obvious: You look in your memory and see what's there. For the first question, you determine that your memory contains the fact that George Washington was the first U.S. President, so you answer "yes." For the second question, if you determine that your memory contains little information about Trollope

(and doesn't include the novel series named *Barchester* and *Palliser*), you would answer "no."

But, if the mechanism were really so simple, we would seldom—if ever—make mistakes about what we know. In fact, we do make such mistakes. For example, we have all confidently thought that we knew how to get to a destination, but then when put to the test by actually having to drive there, we realize that we don't know. The route may seem familiar, but that's a far cry from recalling every turn and street name.

The feeling of knowing has an important role in school settings because it is a key determinant of student studying (e.g., Mazzoni & Cornoldi, 1993). Suppose a third-grader has been studying the Vikings with the goal of understanding where they were from and what they did. At what point does the third-grader say to him or herself: "I understand this. If the teacher asks me, 'Who were the Vikings?' I could give a good answer."

Every teacher has seen that students' assessments of their own knowledge are not always accurate. Indeed, this inaccuracy can be a source of significant frustration for students on examinations. The student is certain that he or she has mastered some material, yet performs poorly on a test, and may, therefore, conclude that the test was not fair. The student has assessed his or her knowledge and concluded that it is solid, yet the examination indicates that it is not. What happened? What cues do students use to decide that they *know* something?

Cognitive science research has shown that two cues are especially important in guiding our judgments of what we know: (1) our "familiarity" with a given body of information and (2) our "partial access" to that information. In this column, I'll discuss how these two cues can lead students to believe that they know material when they don't. And, in the box on page 41, I suggest ways that teachers can help students develop more realistic self-assessments of their knowledge.

"Familiarity" Fools Our Mind into Thinking We Know More Than We Do

The idea of familiarity is, well, familiar to all of us. We have all had the experience of seeing someone and sensing that her face is familiar but being unable to remember who that person is or how we know her.

Psychologists distinguish between *familiarity* and *recollection*. Familiarity is the knowledge of having seen or otherwise experienced some stimulus before, but having little information associated with it in your memory. Recollection, on the other hand, is characterized by richer associations. For example, a young student might be familiar with George Washington (he knows he was a President and maybe that there's a holiday named after him), whereas an older student could probably recollect a substantial narrative about him. (See Yonelinas, 2002, for an extended review of the differences between recollection and familiarity.)

Although familiarity and recollection are different, an insidious effect of familiarity is that it can give you the feeling that you know something when you really don't. For example, it has been shown that if some key words of a question are familiar, you are more likely to think that you know the answer to the question. In one experiment demonstrating this effect (Reder, 1987), subjects were exposed to a variety of word pairs (e.g. "golf" and "par") and then asked to complete a short task that required them to think at least for a moment about the words. Next, subjects saw a set of trivia questions, some of which used words that the subjects had just been exposed to in the previous task. Subjects were asked to make a rapid judgment as to whether or not they knew the answer to the question—and then they were to provide the answer.

If the trivia question contained key words from the previous task (e.g., "What term in golf refers to a score of one under par on a particular hole?"), those words should have seemed familiar, and may have led to a feeling of knowing. Indeed, Reder found that subjects were likely to say that they knew the answer to a question containing familiar words, irrespective of whether they could actually answer the question. For questions in which words had not been rendered familiar, subjects were fairly accurate in rapidly assessing their knowledge.

A similar effect was observed in an experiment using arithmetic problems (Reder & Ritter, 1992). On each trial of this experiment, subjects saw an addition or multiplication problem (e.g., $81 + 35$) and they had to rapidly decide whether they would calculate the answer or answer from memory. If they chose to calculate, they had 20 seconds to do so; if they chose to answer from memory, they had just 1.4 seconds. Sometimes problems repeated, so subjects might have had the answer to a complex problem in memory. Subjects were paid depending on their speed and accuracy, so the decision about whether or not to calculate was important. As in the trivia question experiment, subjects were accurate in knowing when they could retrieve an answer from memory and when they needed to calculate it—except in one situation, when the experimenters repeated a two-digit problem but changed the operation (e.g., addition to multiplication). In that case, subjects were just as likely to try to retrieve an answer from memory for a problem they had actually just seen (e.g., $81 + 35$) as they were for a problem they had *not* just seen but which used familiar operands (e.g., $81 - 35$). The experimenters argued that subjects made their judgment about whether to calculate based on the familiarity of the problem components, not on the whether the answer was in memory.

"Partial Access": Our Mind Is Fooled When We Know Part of the Material or Related Material

A second basis for the feeling of knowing is "partial access," which refers to the knowledge that an individual has of either a component of the target material or information closely related to the target material. Suppose I ask you a question and the answer doesn't immediately come to mind, but some related information does. For example, when I ask for the names of the two series of Trollope novels, you readily recall *Barchester* and you know I mentioned the other series earlier; you even remember that it started with the letter P, and you believe it had two or three syllables. Your quick

retrieval of this partial information will lead to a feeling of knowing the relevant information—even if *Palliser* is not actually in your memory.

The effect of partial access was demonstrated in an experiment (Koriat & Levy-Sadot, 2001) in which subjects were asked difficult trivia questions. If subjects couldn't answer a particular question, they were asked to judge whether they would recognize the answer if they saw it (i.e., to make a feeling-of-knowing judgment). The interesting twist: Some of the questions used categories for which lots of examples came to mind for their subjects (e.g., composers) and matching questions used categories for which few examples came to mind (e.g., choreographers)—that is, these subjects could easily think of at least a few famous composers, but couldn't think of more than one or two choreographers, if any.

The results showed that whether or not they could actually recognize the right answer, people gave higher feeling-of-knowing judgments to questions using many-example categories (e.g., "Who composed the music for the ballet *Swan Lake*?") than to questions using few-example categories (e.g., "Who choreographed the ballet *Swan Lake*?"). The experimenters argued that when people see the composer question, the answer doesn't come to mind, but the names of several composers do. This related information leads to a feeling of knowing. Informally, we could say that subjects conclude (consciously or unconsciously), "I can't retrieve the *Swan Lake* composer right now, but I certainly seem to know a lot about composers. With a little more time, the answer to the question could probably be found." On the other hand, the choreographer question brings little information to mind and, therefore, no feeling of knowing.*

* * *

These studies, and dozens of others like them, confirm two general principles of how people gauge their memories. First, people do not assess their knowledge directly by inspecting the contents of memory. Rather, they use cues such as familiarity and partial access. Second, most of the time these cues provide a reasonable assessment of knowledge, but they are fallible.

How Students End Up with "Familiarity" and "Partial Access" to Material

If a student believes that he knows material, he will likely divert attention elsewhere; he will stop listening, reading, working, or participating. Mentally "checking out" is never a good choice for students, but all the more so when they disengage because they *think* they know material that, in fact, they do not know. The feeling of knowing becomes a problem if you have the feeling without the knowing. There are some very obvious ways in which students can reach this unfortunate situation in a school setting. Here are several common ones:

1. Rereading. To prepare for an examination, a student rereads her class notes and textbook. Along the way, she encounters familiar terms ("familiar" as in she knows she's heard these terms before), and indeed they become even more familiar to her as she rereads. She thinks, "Yes, I've seen this, I know this, I understand this." But feeling that

you understand material as it is presented to you is not the same as being able to recount it yourself.

As teachers know, this gap between feeling that you know and genuine recollection can cause great frustration. I have frequently had exchanges in which one of my students protests that despite a low test grade, he or she really knew the material. When I ask a general question or two, the student struggles to answer and ends up sputtering, "I can't exactly explain it, but I know it!" Invariably, a student with this problem has spent a great deal of time reading over the course material, yielding a lot of familiarity, but not the necessary and richer recollective knowledge.

2. Shallow Processing. A teacher may prepare an excellent lesson containing a good deal of deep meaning. But this deep meaning will only reside in a student's memory if the student has actively thought about that deep meaning (see "Students Remember ... What They Think About," in the Summer 2003 issue of *American Educator*). Let's say, for example, that a teacher has prepared a lesson on the European settlement of Australia and on the meaningful issue of whether that settlement should be viewed as a colonization or invasion. But, let's say that a given student did not process and retain the deep meaning intended by the lesson. He did absorb key terms like "Captain Cook" and "Aborigines." His familiarity with these key terms could mislead him into believing he was ready for a test on the subject.

3. Recollecting Related Information. Sometimes students know a lot of information *related* to the target topic, and that makes them feel as though they know the target information. (This is analogous to the subjects in the experiment who knew the names of many composers and so felt that they knew who composed *Swan Lake*.) Suppose that a fifth-grade class spent three weeks studying weather systems, including studying weather maps, collecting local data, keeping a weather journal, learning about catastrophic weather events like hurricanes, and so on. In preparation for a test, the teacher says that there will be a question on how meteorologists use weather maps to predict hurricanes. When the student hears "weather map," she might recall such superficial information as that they are color coded, that they include temperature information, and so on; she feels she knows about weather maps and doesn't study further. In fact, she hasn't yet come to understand the core issue—how weather maps are used to predict weather. But her general familiarity with the maps has tricked her into believing she had the necessary knowledge when she didn't. (Ironically, the problem of recollecting related information is most likely to occur when a student has mastered a good deal of material on the general topic; that is, he's mastered *related* material, but not the target material. It's the knowledge of the related material that creates the feeling of knowing.)

* * *

Cognitive science research confirms teachers' impressions that students do not always know what they think they know. It also shows where this false sense of knowledge comes from and helps us imagine the kinds of teaching and learning activities that could minimize this problem. In particular, teachers can help students test their own knowledge

in ways that provide more accurate assessments of what they really know—which enables students to better judge when they have mastered material and when (and where) more work is required.

*Another important aspect of this phenomenon is that the accuracy of partially retrieved information is irrelevant to the feeling of knowing. In an experiment illustrating this phenomenon, Asher Koriat (1993) asked subjects to learn strings of letters. Later, subjects were asked to recall as many letters as possible and then judge whether they would successfully recognize the entire string from among several choices. Subjects' confidence that they would recognize the letter string increased with the number of letters that they had recalled, regardless of whether or not those letters were correct. The more they thought they were pulling out of memory, the more confident they were that they really knew the whole string and would recognize it when they saw it.

D. LECTURING

- The major thrust or topic of lecture and what you expect of students should be clearly indicated in the beginning so that students can focus their attention. Students expect teachers to take charge, initiate learning activities, and contribute important information.
- When goals and objectives you have planned are shared with students, they feel more motivated to learn the content. Goal clarity sets the climate for the entire class.
- At times moving around and making **eye contact** with each student can help improve learning.
- Voice pitch and volume can make a difference. If your voice volume is low, please use a microphone. It also helps those who are recording lectures for further study. Most microphones are directional, so it is important to speak close to the mic.
- If irrelevant and distracting student talk occurs, read the riot act. The rest of the students in the class will appreciate being able to focus on your lecture.
- Lecturing with student-teacher interaction can cover the same material, but provide more student involvement in learning.
- Using the same teaching method (e.g., PowerPoint slides) every time is counter-productive and results in boredom and inattention. This seems to be true no matter what teaching method is used. It helps to change gears after 20 minutes so the learning curve can be elevated.

E. INSTRUCTIONAL SESSIONS

INTRODUCTORY FOCUS

The student will learn better by participating, by experiencing, and by gaining knowledge through the process of performing assigned tasks. The following ideas may serve as an aid to improving communication between you and the learner and to assist in the initial training phase.

- Show the relevance. It enhances motivation to learn.
 - Save time by providing background information and overall frame relevant to the task.
 - Show why it must be done in a specific way.
- Encourage questions.
 - People are helped to learn by asking questions.
 - You will know what your students do and don't understand by the kinds of questions asked.
- Keep the learner encouraged.
 - An understanding attitude may be more conducive for learning.
 - Emphasis should be placed on the avoidance of making the same mistakes again.
- Be supportive. Teachers are advocates, not adversaries.
 - Support efforts towards accomplishment.
 - Recognize proficiency and encourage achievement of self-confidence.
- Consider individual differences.
 - Individuals have different learning styles or preferences. (Differences in rate, need for repetition, and preferred channels.)
 - Adjust your approach to the individual learner.
- Provide written instructions when appropriate. Written instructions
 - Provide a better grasp of the subject.
 - Allow outside study time.
- Follow-through.
 - Check back to determine progress.
 - Help smooth out trouble spots through further explanation or demonstration.

DEMONSTRATION: SKILLS TEACHING

PRE-PRESENTATION: (opening set):

- Prepare student for learning.
 - Put the learner at ease
 - Find out what the learner already knows about the task
 - Stimulate interest
 - Motivate
 - Special “dos and don’ts”

- Set objectives.
 - What do you expect the learner to do?
 - With what level of proficiency?
 - Within what time limits?
 - With what level of error?

- Preview Major Units

PRESENTATION SEQUENCE:

- Place the learner in the correct position.

- Verbal walk-through by instructor, demonstrated by instructor (tell, show, illustrate, question, and stress major points).

- Instruct clearly and completely, taking one step at a time.

- Demonstration by instructor, verbal walk-through by student. (Have the learner tell you, and require explanation of key points.)

- Ask questions and correct errors.

- Verbal walk-through and demonstration by student. (Have the learner tell you then show you. Require explanation of key points.)

- Ask questions and correct errors.

- Allow additional practice for weak areas.

CLOSURE:

- Review and highlight key points (special “dos and don’ts”)
- Final test for proficiency
- Link (show connections with other learning)

FOLLOW-UP:

- Put learners on their own. Indicate sources to which they may go for help.
- Check often. Encourage questions.
- Gradually taper off coaching and follow-up.

CHECKLIST FOR SKILLS TEACHING

Teacher: _____ Evaluator: _____ Topic: _____

Did the Instructor:

PRE-PRESENTATION

	YES	?	NO
• Prepare the student for learning?	_____	_____	_____
○ Put the learner at ease	_____	_____	_____
○ Check entry level	_____	_____	_____
○ Stimulate interest	_____	_____	_____
○ Motivate	_____	_____	_____
○ Point out “Dos and Don’ts”	_____	_____	_____
• Set Objectives?	_____	_____	_____
○ Clarify expectations	_____	_____	_____
○ Set level of proficiency	_____	_____	_____
○ Set time limits	_____	_____	_____
○ Set level of error	_____	_____	_____
• Preview Major Units?	_____	_____	_____

PRESENTATION SEQUENCE

• Place learner in correct position	_____	_____	_____
• Do a verbal walk-through demonstration	_____	_____	_____
• Follow a step-by-step procedure	_____	_____	_____
• Demonstrate and ask for a student verbal walk-through	_____	_____	_____
• Ask questions and correct errors	_____	_____	_____
• Verbal walk-through and demonstration by student	_____	_____	_____
• Ask questions and correct errors	_____	_____	_____
• Allow additional practice for weak areas	_____	_____	_____

CLOSURE

• Review and highlight key points	_____	_____	_____
• Test for proficiency	_____	_____	_____
• Link	_____	_____	_____
• Indicate sources for additional help	_____	_____	_____

FOLLOW-UP

• Put learners on their own. Indicate sources to which they may go for help.	_____	_____	_____
• Check often. Encourage questions.	_____	_____	_____
• Gradually taper off coaching and follow-up.	_____	_____	_____

F. EDUCATIONAL TECHNOLOGY IN THE CLASSROOM

The instructor of today has a wealth of available educational technology that was not even considered a decade ago. If you are not technologically inclined, you may feel overwhelmed at all the options available to you. Or, perhaps you haven't considered how adding technology could improve your students' comprehension of and engagement with course material. Podcasting, social networking, smartphone apps, YouTube—all are being used by faculty to enhance their students' learning experiences. One piece of technology deserves special mention: audience response systems (“clickers”).

Why Use Clickers?

Using clickers can result in increased student engagement. Depending on how clicker questions are structured, students can have an opportunity to consider their response before seeing their classmates' answers. Even the small act of pushing a button to select a response gives students a sense of commitment toward an answer. Having to commit to an answer before seeing others' responses can force students to grapple with a question when they might otherwise not have given serious thought on how to answer it. Another advantage of not knowing how others are responding is that the various options all have equal weight. This can broaden a student's perspective. If a show of hands is used to indicate their answer, students can see which is the most popular response and may be tempted to discount the other choices.

Beyond the engagement advantage, allowing students to see how their comprehension of the learning material compares to that of their classmates' helps in two ways. If a student answers a question incorrectly yet notices that several members of his class also answered incorrectly, he will not feel so bad. If a student finds that he is the only person in his class who missed a question, he will feel pressure to meet the standard set by his class.

The instructor can use the information on whether the entire class or just a few students are struggling with a concept to structure how best to deal with the situation. A class-wide review session might be in order if many students are unsure of the material. However, an office visit might be sufficient if just a few students need help in understanding a concept.

from Bruff, D. (2009). *Teaching with classroom response systems: Creating active learning environments*. San Francisco, CA: Jossey-Bass.

Since Dr. Bruff wrote this book, a number of alternatives to clickers have appeared, many using students' own smartphones. Check out these four alternatives from a 2013 blog post available at <http://www.freetech4teachers.com/2013/03/four-good-alternatives-to-clicker.html#.V9jYi5grLIU>

G. USING QUESTIONS IN THE CLASSROOM

1. Questioning Skills

What is it?

A teaching technique which involves skilled use of teacher-student interaction.

Why use it?

1. To obtain feedback
2. To stimulate discussion
3. To keep the learner active
4. To stimulate interest
5. To enhance cognitive functioning

What are the major components?

1. Vary the Pattern of Questions
 - a) Student-to-student (“Bill, do you agree with Jim’s answer?”)
 - b) Complete class response (“How many agree with this?”)
 - c) Distribute questions equally – call on non-volunteers
2. Vary the Type of Questions
 - a) Simple questions (“What color are oxygen tanks?”)
 - b) Probing questions (“Which of these two items would you do first and why?”)
 - c) Higher-order questions (“What are some other options of reducing preoperative tension that the textbook doesn’t mention?”)
3. Vary the Thinking Time
 - a) Ask for immediate response (“What’s the first thing that comes to mind when I say ‘emergency’?”)
 - b) Allow some response time (“Before you answer this question, think carefully about the implications.”)
 - c) Allow adequate preparation time for a more carefully reasoned response (“I’m going to give you three minutes to prepare your answer. List in order of importance, and justify the ranking of the steps you would take in case of long-term hiccups.”)

2. Types of Questions

1. BROAD or NARROW
2. KNOWLEDGE or REASONING
3. SELECT or PRODUCE
4. WHAT or WHY or HOW or WHEN or WHO
5. INQUIRY or PROBE
6. COMPARE or CONTRAST
7. ARRANGE or SEQUENCE
8. SOLVE or EVALUATE
9. CLUES or HELPS
10. WHAT IF or ASSUME

3. Questioning Strategies

MODIFY TIME:

“TAKE 2 MINUTES TO PREPARE YOUR ANSWER”

“BRING IN YOUR ANSWER TOMORROW”

MODIFY RESPONSES PATTERNS:

“BILL, DO YOU AGREE WITH MARY?”

“CLASS, HOW MANY OF YOU AGREE WITH BILL?”

MODIFY RESPONSE SYSTEM:

“BEFORE ANSWERING, COMPARE YOUR ANSWER WITH A NEIGHBOR.”

“WRITE YOUR ANSWER ON NEW BLANK SHEET OF PAPER.”

MODIFY YOUR FOLLOW UP:

“CAN YOU ADD ANYTHING TO THAT ANSWER?”

“TAKE THAT A STEP FURTHER AND ...”

H. ANSWERING QUESTIONS

Setting aside time for student questions, especially in the middle of a lecture, can be a far better use of time than simply lecturing in an attempt to cover material. Skill in responding to questions can be learned. Here are some suggestions for how to respond effectively to student questions.

1. General Principles

- Don't panic. Remain in charge.
- Listen carefully for questioner's intent.
- Don't start answering too soon.
- Don't rush—good tempo is the key.
- Practice variety in answering patterns until you become skilled.
- Think for a moment and select the right options.

2. Response Options

- **Reframe the question**—"Let me see if this is what you are asking . . ."
- **Answer briefly.** Do not give another speech. Don't over-expand.
- **Use "Yes" or "No"**—Occasionally a single short response is appropriate.
- **Thank the questioner**—"That's a good question" or "I'm glad that you asked that," etc.
- **Admit ignorance**—At times it may be better to say, "I'm sorry, I really don't know."
- **Indicate additional information resources**—Here you suggest that the questioner see someone, read an article, check with a research center, etc.
- **Combinations**—Vary your answering pattern. For example: Use thanks—reframe question—indicate source of further information, etc.

3. Dealing With Disruptive Students

What to do when these characters show up:

The Speechmaker

He wants his own platform. Pleasantly but firmly interrupt with “I’m not sure what your question is…” or “Do you have a specific question?”

The Intimidator

His purpose is to deflate you as a speaker and inflate his own importance. Graciously expect and accept—remain in charge. Don’t fall into the trap of the intimidator. (“That’s an interesting point of view.”)

The Nitpicker

He is over-interested in the minor details. Acknowledge his interest but don’t lose your main focus—you can’t afford the time. Answer briefly and move on.

The Side-Tracker

He will try to derail you—keep on track—maintain focus. (“That’s an interesting position, perhaps we could discuss it after the session.”)

The Heckler

His purpose is distraction, frustration and annoyance. Don’t lose your cool, stay in control—remember his purpose. Don’t let him win. (Silence may be your best response.)

I. EFFECTIVE TEACHING

Pro Learning Styles

Every teacher has a teaching style that is a reflection of his or her personality. Students' learning styles are an outgrowth of their personalities. When an instructor's teaching style matches the learning style of his or her students, learning is enhanced. However, classrooms contain a mix of personality styles. In order to maximize learning outcomes, a teacher needs to recognize his or her usual teaching style, recognize the different styles of his or her students, and learn to adapt his or her customary style to match students' learning styles. In this way, all students have an opportunity to learn in a style that feels "right" to them.

Therefore, a simple method to identify teaching and learning styles is needed. The Myers-Briggs Type Indicator (MBTI) can help identify personality style, which in turn gives rise to learning style. The Center for Teaching and Learning administers the MBTI to incoming students. Faculty members are welcome to obtain information on the personality makeup of the class as a whole (e.g., the first year optometry students might be 20% primary Sensors, 79% primary Thinkers, and 1% primary Intuitives). Faculty members are encouraged to take the MBTI to determine their own personality style. The Center for Teaching and Learning is happy to provide that service free of charge.

Developing the ability to change teaching style has to be more than a nice idea I might try someday. It is crucial to effective teaching and requires constant reminders to us to flex what we are doing. If you would like more information on flexing your teaching style to be more responsive to your students' different personalities, I would like to recommend the book *I Am a Tree, I Can Bend: Adapting Your Communication Style to Better Suit Your Students' Needs*. It can be ordered through any of the major booksellers (Amazon.com, Barnes and Noble, etc.).

Resources for additional reading on teaching and learning styles:

Butler, K. A. (1990). *Learning and teaching style: In theory and practice*. Columbia, CT: Gregorc Associates.

Claxton, C. S., & Murrell, P. H. (2000). *Learning styles: Implications for improving educational practices*. Somerset, NJ: John Wiley & Sons.

Dunn, K. J., & Dunn, R. S. (1978). *Teaching students through their individual learning styles: A practical approach*. Old Tappan, NJ: Prentice Hall.

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

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Pro Differences in Ability, Interest, and Background

A growing number of psychologists and cognitive psychologists can be heard stating learning styles are a myth. They argue individuals may have preferences for learning material in certain ways because of specific mental aptitudes and/or deficiencies, but it is the material itself and how it is to be used which dictate how it needs to be encoded in memory. In a short video entitled *Learning Styles Don't Exist*, (<https://www.youtube.com/watch?v=sIv9rz2NTUk>), cognitive psychologist Daniel Willingham explains that what most people think of as differences in learning style are better characterized as differences in ability or interest or background knowledge. That is not to say teachers should abandon trying to teach material in a variety of ways. It could be that repetition helps most students.

To quote from a 2010 article:

The critical and specific claim of learning-styles proponents [is] *Learning could be improved by matching the mode of instruction to the preferred learning style of the student*. Learning-styles believers do not make the claim that students sort neatly into sensory categories: One need not be purely visual, auditory or kinesthetic. But according to the theory, an educator should be able to improve the performance of those who have a strong preference for one of these sensory styles by matching instruction to their preference.

Failure to find any experimental support for matching the mode of instruction to a preferred learning style would simply leave us where we were at the end of the section above: Students have different interests, backgrounds, and abilities. And indeed, a recent review article in the journal *Psychological Science in the Public Interest* by a group of distinguished memory researchers sought to find evidence for this claim in particular. If you are visual, you should learn better with a visual presentation of information than with an auditory one. If you are auditory, you should learn better with auditory materials than with visual ones. Each of this pair of results is necessary to support this element of learning-styles theory. But experiments that tested this prediction with a variety of content material have not found support for it.

Riener, C., & Willingham, D. (2010). The myth of learning styles. *Change: The Magazine of Higher Learning*, 2010(September-October). Retrieved from <https://www.tandfonline.com/doi/full/10.1080/00091383.2010.503139>

Please also see Dr. Willingham's responses to frequently asked questions regarding learning styles at <http://www.danielwillingham.com/learning-styles-faq.html>

J. DEVELOPING STUDENTS' STUDY SKILLS

Many HPD students breezed through their undergraduate or prerequisite courses with nary a thought of how to study. Memorizing information came easily to them, and they were adept at cramming for exams the night before. Forgetting the information the next day did not seem to matter nor carry any consequences. However, in the health professions, the volume of information for which students are responsible is so large as to beleaguer even the most fluid of intellects and the information needs to be retained throughout the whole course of study and beyond. Students may need help in learning different study techniques, learning about themselves as learners, and learning strategies to be effective students. Throw them a lifeline; share this information with them.

Make It Stick: The Science of Successful Learning by Peter C. Brown, Henry L. Roediger III, and Mark A. McDaniel

How to take better notes. See the *Innovative Instructor Blog* at <http://ii.library.jhu.edu/2017/03/29/scaffolding-part-2-build-your-students-notetaking-skills/>

How to read a scholarly article. See the *Innovative Instructor Blog* at <http://ii.library.jhu.edu/2017/02/28/scaffolding-teach-your-students-how-to-read-a-journal-article/>

You might want to use some of the tests for self-regulation mentioned in Linda Nilson's *Creating Self-Regulated Learners*. Your students will be able to determine where they land on the spectrum of self-regulation and (it is to be hoped) begin to manage themselves more productively. The entire book is full of good strategies for helping your students learn to deal with obstacles to effective studying.

“Study Strategies for Before, During, and After Class” by Angela Zanardelli Sickler from the April 10, 2017 *Faculty Focus*. http://email.magnapubs.com/study-strategies-for-before-during-and-after-class?ecid=ACsprvvrqogrp4XIheLyCBAU_7mlJmuR4EIER8X0qFVfKErgg0wrNJybD1qNjh6s5HT8AemM-JSG&utm_campaign=Faculty%20Focus&utm_source=hs_email&utm_medium=email&utm_content=50284582&_hsenc=p2ANqtz-_T2ajZsqWci-o2xdp-YICdJmNfw1ZZckmTAgun81jwRQQR0xhtGhDmGuF5T7ymWuoRJhTEjVm71EPVt4aJrOaS2ERbbw&_hsmi=50284582

Psychological principles applied to studying is an excellent collection of articles and videos related to how people learn. <https://bjorklab.psych.ucla.edu/research/>

25 Principles of Learning appears in Graesser, (2009). Inaugural editorial for *Journal of Educational Psychology*. *Journal of Educational Psychology*, 101(2), 259-261. The table appears on page 260.

SECTION V

ASSESSMENT

A. STUDENT ASSESSMENT

Assessment of student learning should not be limited to a midterm and a final exam. Ideally, student assessment will take many forms—questions during lectures, online quizzes students can take for self-assessment, a variety of classroom assessment techniques, practicals, journals, and projects. At its best, student assessment becomes more than a tool for determining a grade. It can be a vital part of helping students understand material and grow as learners.

The sections below deal with classroom assessment techniques, online quizzes, clinical assessment techniques, examination planning, how to write better test questions, and understanding the statistical analysis of a test.

1. Classroom Assessment Techniques

Classroom assessment techniques can be great sources of information about how well your students understand the material you have presented. You can use that information to focus on areas your students find difficult, skim over areas they understand well, and modify explanations to help them understand key concepts. In addition, some of the techniques will improve students' ability to organize material and improve their study skills. The seven techniques below are taken from *Classroom Assessment Techniques*, by Thomas Angelo and K. Patricia Cross (2nd Edition, 1993, Jossey-Bass). The book is available for loan from our department.

BACKGROUND KNOWLEDGE PROBE

Description: This assessment technique gauges how well students are prepared to learn the material about to be presented.

When to use: This can be used at the start of a course, or the start of any new segment of a course.

What you need to do: Prepare 2-3 open-ended questions, a handful of short-answer questions, or 10-20 multiple choice questions that will probe your students' existing knowledge of what they are about to begin studying.

Be sure to:

- Use language that will be easily understood—you're not going to get good data if your students don't understand the questions.
- Let your students know this is not part of their grade.
- Have a plan for dealing with under-prepared students.
- Not let an initial poor performance permanently bias you against a student.

Follow up: Share the overall results with the students—they will want to know how they compare to their classmates. Track how well your students do in the course compared with how they did on the probe.

FOCUSED LISTENING

Description: This assessment technique asks students to respond to the question: What terms do you need to know to show you understand this topic?

When to use: This works well at the end of a session, but can also be used as a before and after tool.

What you need to do: Choose an important topic or concept that has been or is about to be studied and describe it in a word or phrase. Use that word or phrase as a heading. Ask your students to create a list of related terms important to understand that topic.

Be sure to:

- Set a time, number, or time and number limit. 2-3 minutes, 5-10 items works well.
- Create your own master list, to use as a standard for your students' lists.
- Be open to new possibilities suggested by your students.
- Let your students know if you have specific guidelines such as only listing defining words, synonyms, or examples.

- Choose the right size topic. Too narrow and the lists are trivial. Too broad and the lists become unmanageable.

Follow up: Sort the responses you get into piles of relevant/not relevant. If you have time, you could sort by degrees of relatedness. At the start of the next class period, share your master list with students. Let them also see some of the irrelevant suggestions and discuss why those were not good choices.

MISCONCEPTION/PRECONCEPTION CHECK

Description: This assessment technique allows you to find what pre-existing information may hamper your students' ability to learn the material you are presenting.

When to use: This works well at the beginning of a course or the start of a segment of a course.

What you need to do: Brainstorm with fellow faculty members to identify common misconceptions students may bring to your course. Select the few most likely to cause your students trouble. Develop a questionnaire (multiple choice works especially well) to uncover your students' beliefs in those areas. You could also use the questionnaire to find out how sure students are about certain information or to find out where they got their beliefs.

Be sure to:

- Make the responses anonymous and let your students know they are anonymous.
- Be sensitive when discussing the erroneous beliefs, it can be stressful or painful to have to alter one's view of how the universe works.
- Keep the atmosphere in your classroom polite. If you allow students to ridicule each other's answers, they will never open up again.

Follow up: You can turn this into a research opportunity to let your students find out which are the better answers. You will want to share responses with the class. Students are often relieved to find out they are not the only ones with shaky information.

EMPTY OUTLINE

Description: This assessment technique asks students to fill in an empty outline for material they have just learned. It can be useful to help students organize large amounts of new information.

When to use: This works well at the end of a lecture or course segment.

What you need to do: Create an outline for material that you will present. Leave out some of the subheadings or maybe some of the major headings. At the end of your lecture, distribute the partial outlines to the class and have them complete the information. Reading responses can turn into a lot of work for the teacher, so for large classes have students work in groups.

Be sure to:

- Limit the number of things you want your students to fill in. Ten seems to work well.
- Let students know what kind of responses you're looking for.
- Limit the time for this exercise. No more than 10 minutes at the end of class.

Follow up: You can use this technique to see if your students get the main points of your lecture. Frequently, students are good at remembering the main points from the beginning and end, but not as good at remembering material from the middle. To enhance learning, you may want to break up your lecture and use the Empty Outline technique twice in a class session. You may

find it informative to consider not just whether students' responses differ from yours, but to examine the range of students' responses and see if you pick up any trends.

MEMORY MATRIX

Description: This assessment technique allows students the opportunity to practice organizing the information they have learned into a matrix devised by the instructor. Students are asked to supply examples or fill in a matrix.

When to use: This works well at the end of a lecture or course segment.

What you need to do: Create a blank matrix of information you expect your students to know. Here is an example, kindly created by Dr. Richard Finkel of the College of Pharmacy. Reading the responses can turn into a lot of work for the teacher, so for large classes have students work in groups. A variation is to have students fill out individual matrices, then collaborate as a group to try to create a more complete one.

ANTI-ANXIETY DRUGS

PRODUCT	MECHANISM	INDICATION	CONTRAINDICATION

Then, what you might expect to see would be something along these lines:

ANTI-ANXIETY DRUGS

PRODUCT	MECHANISM	INDICATION	CONTRAINDICATION
<i>Xanax</i>	<i>GABA agonist, hyperpolarizes neuron and decreases firing</i>	<i>anxiety, insomnia</i>	<i>depressed patients, patients on other CNS depressants (e.g., valerian, kava, Benadryl)</i>

Be sure to:

- Limit the time you allow for the exercise. No more than 15 minutes. (Students will expand this exercise to fill whatever time is allowed.)
- Give the students a number of items to shoot for.

Follow up: Look through the matrices and note where students entered incorrect information. Check for blank cells. Share the results with your students.

MINUTE PAPER

Description: This technique asks students to respond briefly in writing to some variant of these two questions: “What was the most important thing you learned in this class?” and “What important question remains unanswered?”

When to use: This assessment technique works well at the end of a class.

What you need to do: In the final 3-5 minutes of class post those questions (or some variation on those questions) so everyone can see them. Ask students to write their responses on a slip of paper. Anonymous replies are best. Collect the responses as students are walking out of class.

Be sure to:

- Try the questions out on a colleague first.
- Set aside time in the next class to discuss the results.
- Tell your students what kind of response you want: a word, a phrase, short sentence(s).

Follow up: Tabulate the responses. Look for trends. If you have a wide range of responses to what was the most important thing learned today, you may need to help your students sort out what is important from the details or you may want to be more explicit. Use students’ responses on what remained unanswered to jump-start the next class period.

MUDDIEST POINT

Description: This technique asks students to respond briefly in writing to the question, “What was the muddiest point in the lecture for you?”

When to use: This assessment technique works well at the end of a class.

What you need to do: At the beginning of the lecture let your students know you will be asking this question. In the final 3-5 minutes of class, pose the question to your students and have them write their response on a slip of paper. Anonymous replies are best. Collect the responses as students are walking out of class.

Be sure to:

- Be prepared to be surprised at the responses you get. It can be a humbling experience.
- Set aside time in the next class to discuss the results.
- Retain the responses for the next review session, and put some of them on the next exam.

Follow up: Tabulate the responses. Look for trends. Respond to the most frequent muddy points, post information on where to go for additional clarification, or create handouts to address muddy points. If students are confused by points that will be addressed in later classes, reassure them that their concerns will be addressed in upcoming classes. The Muddiest Point in the Lecture assessment technique is one of the oldest and most widely used classroom assessment techniques around.

2. Online Quizzes

Online quizzes taken during students' own time, as opposed to class time, can serve a variety of purposes: help students practice skills, check their mastery of material, and prepare them for high-stakes exams. You can use the quizzing features within Canvas to automatically open and close the quizzes, determine when or whether students can receive a score on their quiz attempts, set how many attempts students have to take a quiz, and provide feedback on incorrect answers.

The following article from the *Faculty Focus* newsletter contains some practical advice for faculty members wishing to use online quizzes.

Why Open-book Tests Deserve a Place in Your Courses

By Matt Farrell and Shannon Maheu

With the proliferation of learning management systems (LMS), many instructors now incorporate web-based technologies into their courses. While posting slides and readings online are common practices, the LMS can also be leveraged for testing. Purely online courses typically employ some form of web-based testing tool, but they are also useful for hybrid and face-to-face (F2F) offerings. Some instructors, however, are reluctant to embrace online testing. Their concerns can be wide ranging, but chief among them is cheating.

Of the many obstacles that web-based technologies present, combating academic dishonesty is among the most challenging. For many it is hard to envision a scenario where a student completes an online quiz (or test) without using their smartphone, tablet, or other device to look up the answers, or 'share' those answers with other students. Those of us who use online quizzes have experimented with lockdown browsers, randomized questions, and anything else we can find to try to 'defeat' the students in their quest to cheat. One potential solution is worth exploring: open-book testing.

Instead of wasting valuable time to deter cheating, open-book tests shift the onus of responsibility onto the students themselves. They are the ones who must track down answers and page through online notes. That doesn't, however, mean we should wave the white flag. Random question generation and randomized responses are still good techniques to employ. When coupled with an open-book test, they can challenge students and reduce the relative value of cheating.

If you can't beat 'em, don't try!

Cheating becomes an appealing option when the response to a question is one that can be easily Googled. A student need not read a single chapter or attend any classes, if they know their smartphone will come to their rescue. An open-book test, with challenging application questions that relate directly to the course material, can help minimize the problem. Here are some tips:

- **Draw specifically on course content/lectures.** Asking students a basic identification question will send them straight to Wikipedia. Instead, ask them to analyze the author's argument on page 34, or interpret the results shown in a diagram.

- **Keep the time tight.** When time is limited students won't be able to blindly scavenge the course notes for the answer. They will recognize the need to prepare and have some familiarity with the material or they will simply run out of time.
- **Make the questions tough.** Use distractor questions that closely resemble the correct answer. Students will need more than a passing glance at the material to locate the correct response. Use application and analysis questions that challenge students to fully understand and synthesize the concepts related to the learning outcomes.
- **Recognize collaboration.** The effect of randomized questions is that two students, sitting side by side, will receive different sets of questions. This ostensibly eliminates the benefit from working together. However, if we encourage students to complete the quiz with a classmate, they will find themselves navigating their notes together and collaborating to identify the correct answer. Well, I hesitate to mention it, but that sounds a lot like studying!
- **Tell students you know they have access to their resources.** Now it's out in the open. It is puzzling that if students know that a test is open-book, they often assume that there is no studying required. By communicating your expectation, practicing a few questions with them (online or in-class), this tells them they need to study. Anytime I can encourage my students to interact with lecture notes, videos, and textbook chapters, it's a win for me (learning outcomes) and a win for them (they study).

“But they aren't learning anything that way!” you say. Aren't they? It is true that they aren't memorizing things and recalling them later. But that isn't necessarily our ultimate goal. Our goal, when it comes to assessments, is to measure our student's achievement of the course learning outcomes. If open book tests can help, why not give them a try?

This article originally appeared in the May 18, 2015 issue of [Faculty Focus](#). © Magna Publications. Reprinted with permission.

3. Strategies for Clinical Assessments

Please indicate the frequency with which you use the following teaching strategies in the clinical setting, and think about ways to utilize those not being used.

	<u>Never</u>	<u>Sometimes</u>	<u>Routinely</u>
1. Administration of a written pretest	_____	_____	_____
2. Conduct a 10 to 15 min. orientation conference with the student at the beginning of the rotation	_____	_____	_____
3. Give the student a syllabus for the rotation	_____	_____	_____
4. Give mini-lectures to a single student or small group.	_____	_____	_____
5. Assignment of case related readings.	_____	_____	_____
6. Assignment of readings which are not necessarily case related.	_____	_____	_____
7. If "Yes" to 5 or 6: Ask questions on the reading assignments.	_____	_____	_____
8. If "Yes" to 5 or 6: Ask student to give a verbal report on the readings.	_____	_____	_____
9. Assign students to write a paper.	_____	_____	_____
10. Observe a student doing a history and physical and give feedback.	_____	_____	_____
11. Demonstrate a procedure/technique and then have the student "try it".	_____	_____	_____
12. Assign student to view a videotape which illustrates a procedure.	_____	_____	_____
13. Ask the student questions in the presence of the patient.	_____	_____	_____
14. Involve the patient in giving feedback to the student.	_____	_____	_____

	<u>Never</u>	<u>Sometimes</u>	<u>Routinely</u>
15. Require student to make a case presentation to a small group of externs, interns, or attendings.	_____	_____	_____
16. Require student to write orders, prescriptions, etc., and give feedback.	_____	_____	_____
17. Ask students to describe how they would manage a patient and ask them to defend their logic.	_____	_____	_____
18. Ask students what tests they would order on a patient and ask them to defend their logic.	_____	_____	_____
19. Conduct teaching rounds.	_____	_____	_____
20. Discuss patients prior to going on teaching rounds.	_____	_____	_____
21. Discuss patients after teaching rounds.	_____	_____	_____
22. Have student audit and critique some of your charts.	_____	_____	_____
23. Assign student to complete a literature review via computer and report on it.	_____	_____	_____
24. Assign student to complete a computer case simulation.	_____	_____	_____
25. Require a student to keep a log and discuss it with him or her.	_____	_____	_____
26. Go over student's strengths and weaknesses relative to the evaluation form at midway point in rotation.	_____	_____	_____
27. Go over students' strengths and weaknesses relative to the evaluation form at the end of the rotation.	_____	_____	_____
28. Give a written or oral exam at the end of the rotation.	_____	_____	_____
29. Require students to participate in a journal club.	_____	_____	_____

4. Examinations

Developing test items for examinations can be a major problem especially if several instructors are involved in the same course. Consider the following suggestions:

Establish deadlines for instructors submitting questions. Seven days in advance of the examinations is sufficient time to review the questions and to avoid placing unfair pressure on printing services.

In addition to the memorandum sent to your instructors concerning all examination deadlines, separate reminders should be sent about one week prior to your deadline. Timely telephone calls may also aid in question acquisition.

Specify a format for all questions submitted. The coordinator may choose a certain format for questions submitted for examinations to simplify putting the test together.

Prompt return of test results aids in the learning process for students. If subjective questions are desired, they require grading by the faculty submitting them.

While it is not required that students keep their test questions, they must be given the opportunity to at least see the questions and the results. In this way, tests can be a teaching tool as well as a basis for grading.

Decide how many questions should be submitted, and how many used, for each hour of lecture. Five to seven questions per hour of lecture are probably the maximum desirable number. The appropriate weighting of examination questions per presentation hour has received the greatest criticism from students. You are encouraged to be sensitive to this and try to establish a reasonable system. For example, if 10% of the lecture time is spent on a particular topic, then 10% of the examination should contain questions on that lecture subject. The Office of Educational Development is a useful resource for this issue. The average time for each question is 1 to 1.5 minutes; therefore, for a 2-hour (110 minutes) exam, approximately 75 questions (or about 2 per contact hour) are needed.

Examinations submitted to the Testing Center will be returned with a complete item analysis of all test results. This service is available regardless of whether or not the exam was created by the Testing Center. The Center is located in the office of Educational Development.

Grading Policy for a course is determined by the participating faculty and detailed in the course syllabus. A thorough review of University guidelines and policies will be helpful in generating a grading policy. In general, some level of performance is established (commonly 70%) for passing. Some courses use a curve or standard scores, others use straight percentage, while others use instructor conferences. Regardless, all courses currently have grading policies that need to be reviewed yearly in light of past experiences. **Use of normal distribution curves is not appropriate for skewed classroom populations.**

(a) The Trouble with Testing...

The importance of grades to students, (to academic admissions committees, to students' families and potential employers) cannot be understated. During the years at university a student's concept of self-worth and intellect is based largely on grades. Grades become a matter of public record, and frustration about testing methods can impair student/instructor rapport, often blocking learning, according to W.J. McKeachie in 'The Complete Academic.' One answer to the problem, he says, is to construct fair and appropriate tests.

There is some evidence that we actually like to be tested! In his chapter on testing in 'The Craft of Teaching',² K.E. Eble points to the popularity of newspaper quizzes, crossword puzzles and television quiz shows as evidence that we actually find pleasure in learning, and determining what we know.² Why, then, do we alienate students by testing them? Eble believes that "a great deal of sloppy testing exists because the true purpose of tests is to arrive at and defend a grade."² Rather, he says, the instructor should ask "Why am I testing," "How am I testing," and "What result am I getting?"²

In addressing the three questions which he sets out, the author looks at student motivation, grading, and tests as diagnostic tools. Test construction, he claims, usually develops through happenstance, since few academics are skilled in test design. Even some basic rules of learning theory are largely ignored in the testing situation.²

Testing ought to be a means of providing feedback, yet exams are scheduled after classes have concluded, and the important effects of feedback are lost. "Giving feedback," he says, "is as necessary and as worthy of care, intelligence and imagination as making up the test in the first place."² Eble suggests too, that excessive stress is harmful to performance, and that final exams deliberately foster such stress.²

His article concludes with a number of helpful suggestions, which are listed below:

1. Use a variety of testing methods.
2. Always give feedback, promptly if possible.
3. Tests should be more for learning and for motivating than for measuring. All three are useful.
4. Regard the absolute worth and accuracy of testing with suspicion.
5. Reduce in any way you can the threat tests pose.
6. Don't grade all tests.
7. Clarify test objectives both before and after, with yourself and with students.
8. Be honest, open, and fair. Discuss tests both before and after.
9. Let students be makers as well as takers of tests.
10. Don't stress the trivial just because it is so easy to test.
11. Surprise quizzes and tests, which can't be completed in the given time, may serve the teacher's ego more than the student's learning.
12. Be imaginative as well as careful, balanced, and precise.
13. Be generous.²

Accentuating the Positive...

In a recent College Teaching article,³ authors Miriam McMullen-Patrick and Maryellen Gleason look at examinations as a tool to promote, rather than simply assess learning. "All that can be said for most exams," the authors write, "is that they attempt to measure at a particular juncture in time, a student's ability to demonstrate mastery of some information and some skills. Put another way, exams are not the solitary apex of academic life."³ Although exams can promote learning, they often fail to do so. The authors encourage instructors "to adopt a philosophy of exams, to create a set of objectives, and to communicate the essence of both"³ to students.

In addition to a listing of essentials, like "how many questions" or "how much does the exam count," academics should tell students what they believe about exams, what the goal is, and what the grade will mean. In this way, say the authors, students can more readily place exams in the larger context of course goals.³

The Multiple-Choice Exam

Two excellent papers have been published to provide help in designing multiple-choice exams. They acknowledge the problems inherent in designing such tests – clear, explicit, factual questions test recall, but do not challenge students to think. Only the most difficult questions to design can test abilities to integrate and synthesize.

One of these guides to writing multiple-choice exams appears in the November 1987 issue of the 'The Teaching Professor.'⁴ The two highlights of this article are advice about dealing with irate students after exams, and a "Testing the Test" checklist, which helps you to assess the quality of your multiple-choice exams. A partial list of the 15 items follows:

When possible, state the item as a direct question, rather than as an incomplete statement.

- Make the alternatives grammatically parallel with each other, and consistent with the stem.
- Use at least four alternatives for each item.
- Use the alternatives “none of the above” and “all of the above” sparingly. When used, such alternatives were occasionally the right answer.⁴

A more in-depth approach to multiple-choice exams is the objective of Idea Paper No 16 from the Center for Faculty Education and Development, Kansas State University.⁵ As in the previous paper, the authors stress that well-designed exams are important teaching tools. They go on to look carefully at the construction of multiple-choice items, which ought to test knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom’s Taxonomy, 1956).⁶ Both strengths and limitations of multiple choice tests are considered here, followed by recommendations on the appropriate use, preconditions of writing, constructions, and layout of multiple-choice exams. Among the 34 recommendations for constructing the exams are:

- Spread the work across time, review, and revise.
- Avoid pitfalls of writing items that test only recall.
- State problem or ask questions in the positive form.
- Avoid grammatical inconsistencies between the stem and the options.
- Arrange options in a logical order: (chronologically, alphabetically, etc.).⁵

The Matching-Items Exam

The matching test is an objective test that is closely related to the multiple-choice test. A series of items is listed down the left-hand column of the test paper and a series of options is listed down the right-hand column. The student then picks the option that goes with each item. As is true with all tests, the construction of good matching tests is the product of ample time and care and the application of a set of rules that define good times. From Cunningham (1986)⁷ here are some suggestions for good item writing:

- Use only homogenous subject matter
- Do not have the same number of items and options
- Arrange the list of responses in a logical order
- Keep the list of items brief
- Always place the entire task on the same page⁷

The True-False Exam

True-false tests owe much of their popularity to objectivity in scoring and ease of construction. Their inclusion also permits the insertion of a larger number of items than do other item formats. Even though it is easy to generate a large number of items, the true-false test is not considered to be a sound method of assessing student performance. This is because it is hard to write items that are not too easy, too difficult, or so ambiguous and tricky that they provide a poor assessment of knowledge. Nevertheless, if you choose to use true-false items here are some suggestions for good item writing (Cunningham, 1986)⁷:

- Avoid statements that are too general
- Do not use negatives or double negatives

- Do not use long, complex statements
- Do not include more than one idea
- If you are using an opinion, indicate the source⁷

The Essay Exam

Since objective tests (e.g., multiple choice) were first introduced there has been considerable debate in the field of educational measurement concerning the relative merits of essay exams. Among psychometrists, the issue has been resolved in the favor of objective tests. The primary weakness with essay tests is that there is no way to accurately or reliably grade the test. The best tests should be measuring a single trait, while essay tests scores are often confounded by unrelated variables. The advantages of essay exams is that they minimize guessing, force the student to construct his/her own exam, and assess the student's ability to bring disparate material into a meaningful whole. From Cunningham (1986)⁷ here are some suggestions for good item writing:

- Do not employ optional questions
- Specify the value and approximate time for each question
- Score all answers to one question before scoring the next
- Evaluate essay responses anonymously⁷

References

1 McKeachie, W. J. (1987) "Tips on teaching" in M.P. Zanna and John M. Darley (ed.) *The Complete Academic*. New York Random House.

2 Eble, K. E. (1976) "The Craft of Teaching: A guide to mastering the professor's art." San Francisco: Jossey-Bass Inc.

3 McMullen-Pastrick, & M. Gleason, (1986) "Examinations: Accentuating the Positive." *College Teaching* 34,4,135-39. 4.

4 Gleason-Weimer M., ed. (1987) "Choosing the Multiple-Choice Test," *The Teaching Professor* 1, 9.

5 Clegg, V.L. & W. E. Cashin, (1986) "Improving Multiple-Choice Tests," Idea Paper No. 16, Center for Faculty Evaluation and Development, Kansas State University.

6 Bloom, B.S. et al. (1956) *Taxonomy of education objectives: Cognitive domain*. New York: David McKay.

7 Cunningham, G.K. (1986). "Educational and psychological measurement." MacMillan: New York.

(b) Linking Objectives with Test Questions

Bloom's Cognitive Level	Student Activity	Words to Use in Item Stems
Knowledge	Remembering facts, terms, concepts, definitions, principles	Define, list, state, and identify.
Comprehension	Explaining/interpreting the meaning of material	Explain, predict, and interpret.
Application	Using a concept or principle to solve a problem	Apply, solve, show, and make.
Analysis	Breaking material down into its component parts to see interrelationships/hierarchy of ideas	Differentiate, compare, contrast, and distinguish.
Synthesis	Producing something new or original from component parts.	Design, construct, develop, and create.
Evaluation	Making a judgment based on a pre-established set of criteria.	Appraise, evaluate, justify, and judge.

The following is an example of a test question based on the objective "Given a list of 6 things, to identify the 3 critical things plants need for photosynthesis."

Which of the following are the raw materials for photosynthesis?

- A. Water, heat, sunlight
- B. CO₂, sunlight, oxygen
- C. H₂O, CO₂, sunlight
- D. Sunlight, O₂, carbohydrates
- E. H₂O, CO₂, carbohydrates

(c) Test Specification Worksheet

Level	Question	Answers
Knowledge		
Comprehension		
Application		
Analysis		
Synthesis		
Evaluation		

5. Test Analysis

Empirical Improvement of tests Item Analysis

One approach to item improvement is termed “empirical.” Empirical schemes for item improvement rely on the application of the test. With an empirical approach, one is focusing on examinee-response data (test scores). While an empirical approach to item analysis is important in test evaluation, a true item analysis requires both a judgmental, as well as an empirical approach. A range of empirical item-improvement techniques is available to teachers. Following are some traditional empirical techniques used in the examination and improvement of norm-referenced tests.

Difficulty Indices p

One useful index of an item’s quality is its difficulty. The most common employed item-difficulty index, often referred to as p value, is calculated as follows

$$\text{Difficulty } p = R/T$$

Where R = the number of examinees responding correctly to an item.

Where T = the total number of examinees responding to the item.

To illustrate, if fifty students answered an item, and only thirty-seven of them answered it correctly, then the p value for that item’s difficulty would be

$$\text{Difficulty } p = 37/50 = .74$$

Of note, p values can range from 0 to 1.00, with higher p values indicating that more examinees answered the question correctly. The p value should be viewed in relationship to the chance probability of getting the right answer. For example, with a binary-choice item (true-false), on the basis of chance alone examinees should be able to produce a p value of .50. On a five-option multiple-choice test question, a .20 p value would be produced by chance alone. Traditionally, the higher the p value the easier the item; however, remember the actual ease or difficulty of an item is tied to the instructional program surrounding it. The Testing Center calculates the difficulty index (p) for you.

Item Discrimination Index (Point Biserial Correlation)

One of the most powerful indicators of an item’s quality is the item discrimination index. The item discrimination index tells us how frequently an item is answered correctly by those who perform well on the total test. An item discrimination index reflects the relationship between examinees’ responses on the total test and their responses on a particular item. One approach is called a point biserial correlation analysis. Point biserial looks at a particular test question and

calculates the mean total score of students who answered the question correctly and compares it to the mean score of those who answered the item incorrectly.

How does one calculate an item discrimination index? One procedure follows but the Testing Center calculates a point biserial correlation for you.

1. Order the tests from high to low by total score
2. Divide the papers into a high group and a low group with an equal number of papers in each group
3. Calculate a p value for each of the high and low groups $\rightarrow p_h$ and p_l
4. Subtract p_l from $p_h \rightarrow D = p_h - p_l$

For example, let us say you split your class of thirty students into two equal upper- and lower-half papers. All fifteen students in the high group answered question 10 correctly but only five of the fifteen students in the lower group answered it correctly. The item discrimination index for item 10 would be:

$$D = 15/15 (p_h) - 5/15 (p_l) \\ = 1.00 - .33 = .67$$

A positively discriminating item indicates that an item is answered correctly more often by those who score well on a total test, a negatively discriminating item is answered correctly more often by those who score poorly on a total test, and a nondiscriminating item is one for which there is no discernable difference. How large should an item's discrimination index be in order for one to consider the item acceptable? The following is a guideline offered by Ebel (1979).

Discrimination Index	Item Evaluation
.40 and above	Very good items
.30-.39	Reasonably good item but possibly subject to improvement
.20-.29	Marginal items, usually needing and being subject to improvement
.19 and below	Poor items, to be rejected or improved by revision

Distractor Analysis

With multiple choice and matching tests, one can gain more insight by using distractor analysis. A distractor analysis indicates how students respond to an item's distractors. If possible, one can break the analysis into the high and low scoring groups. Popham (1990) offers the following example:

Group	A	B*	C	D	Omit
Upper 16 students	2	5	0	8	1
Lower 15 students	4	10	0	0	1

*Correct Answer

A review of the example reveals that alternative C is doing nothing at all for the item, D is a tempting choice for students in the high group, and A is a tempting answer for students in the low group. Also note ($p = .50$, and $D = -.33$), suggesting this item needs revision. The Testing Center calculates a modified distractor analysis for you.

Reliability

One type of reliability used in the Testing Center is known as internal consistency. As the name implies it focuses on the consistency of a test's internal elements—test items. That is, reliability as measured by an internal consistency measure assesses the interrelations among test items—how related the test questions are. Reliability estimates range from 0 to 1.0 with estimates closer to 1.0 indicating a “superior” test. A number of technical factors effect reliability estimates and they should be examined in the context of test evaluation:

1. Quality of items—if a test has items that are too easy, too hard, poorly written, tricky, or otherwise ambiguous, reliability will be suppressed.
2. Test length—in general, the more items on a test, the more reliable the test will be (assuming items are all of good quality).
3. Variability—tests of average difficulty are usually more reliable than easy tests; however, with a harder test there is more of a tendency for students to guess, which lowers reliability. Given a choice one must balance student morale with test difficulty.
4. Guessing—the more students guess on a test, the less likely it is that the results of a test will be reliable.
5. Physical conditions—poor heating, lighting, and/or seating arrangements can have a differential effect on student performance, with some students affected more than others.

The Standard Error of Measurement

The standard error of measurement is a reflection of the variability of an individual's score if the test were administered repeatedly to the same person. Because it is not practical to re-administer

the test repeatedly, we estimate the variability of an individual's test scores based on data from a group. Using properties of the normal curve, one can make some assertions about the accuracy of an individual's test score. For example, suppose an examinee scored 37 correct on a test and possessed a calculated standard error of measurement 2.25. We could be 68 percent certain that the examinee's true score would fall within limits of 34.75 and 39.25 (1 standard deviation), and 95 percent certain that the true score would fall between 32.50 to 41.50 (2 standard deviations). As one can ascertain, the main use for the standard error of measurement is to construct confidence bands around a test score. The Testing Center calculates the standard error of measurement for you. For more details see the separate handbook published by the Testing Center.

References

- Ebel, R. L. (1979). *Essentials of educational measurement* (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Popham, W. J. (1989). *Modern educational measurement: A practitioner's perspective* (2nd ed.). Boston, MA: Allyn and Bacon.
- Cunningham, G. K. (1986). *Educational and psychological measurement*. New York, NY: MacMillan Publishing.

6. Examination Feedback

In the past, some instructors have found it beneficial to make an answer key available immediately following a test so students can get an indication of their performance. Examination results must be posted by a secret ID number or posted in Canvas. **Those students not wanting their grades posted in any manner have the legal right to request and receive an exception.**

PAST EXAMINATIONS

Course Coordinators are encouraged to place past examinations where they may be equally accessed by all students for study. Thus, faculty will need to develop at least some **NEW EXAMINATION ITEMS** for their course presentations.

B. INSTRUCTOR ASSESSMENT

1. Policy Statement—Assessment of Instruction

What is This Service?

The Center for Teaching and Learning (CTL) is pleased to offer a service to improve instructional quality in the Health Professions Division. That service is observation of classroom performance by trained educational professionals followed by feedback of results and strategies for improvement. The Center for Teaching and Learning is also offering a more detailed statistical analysis of multiple-choice tests than that ordinarily provided by the Testing Center. That service will be offered only for select, “high-stakes” tests, due to the time demands it would place on our staff.

Who Does the Evaluation?

The classroom performance observation and follow up will be conducted by the Vice Provost of the Health Professions Division and experts from the Fischler School of Education and Human Services. The detailed statistical analysis of multiple-choice tests will be performed by the Executive Director of Research, Evaluation, and Faculty Development using IRT/Bayesian statistical software.

Who Will Be Evaluated?

This service is being offered to any faculty member in the Health Professions Division who does classroom teaching. The CTL is developing a process to evaluate clinicians. Budget constraints allow the CTL to conduct observations and follow-ups for only four faculty members per college per year. Requests will be honored on a first come, first served basis.

In addition, some Health Professions Division deans may request this service for their faculty members.

How is the Evaluation Done?

Process

The classroom observation process will be initiated by a faculty member making a request to the Vice Dean, HPD. A pre-assessment conference will be held with the faculty member. Working with the faculty member’s knowledge and consent, the HPD Vice Dean will arrange times for a minimum of two classroom observations. Faculty will not be evaluated without notification by the Vice Dean. After the observations have been conducted, the HPD Vice Dean will schedule a time to meet with the faculty member to discuss the results of the observations. At that time, if further follow-up is needed or desired, additional observations may be scheduled. Faculty members will be given copies of the evaluation forms and suggestions for improvement.

Materials used

The forms used for classroom observation are attached. The forms detail the aspects of classroom performance that will be observed and the standards for performance. These forms are not static, but will be evaluated annually and modified when necessary.

Timeline

From the time of the initial request for the service to the final follow-up meeting may take as long as two months. Faculty members wishing to include the results of their classroom observation process in their portfolios will want to schedule accordingly.

How to Request an Evaluation

Faculty members wishing to take advantage of this service should call or email the Director of Faculty Development, HPD—Kathleen Hagen, Ed.D. at (954) 262-1235 or khagen@nova.edu

Confidentiality

The results of an instructor-initiated classroom observation process are confidential and belong to the instructor. A copy of the results will be archived with the Vice Dean but will not be distributed in any way. When a dean requests a faculty member to be observed, the dean will receive a summary of the observational reports. The faculty member will receive a complete packet of information.

Results of the Evaluation

At the conclusion of the observation process, the faculty member will receive a copy of the forms used in the observation and any recommendations the observer has for the faculty member.

Why be Evaluated?

The primary goal of this service is to improve and/or strengthen instruction. Faculty members may choose to undergo the process to improve their instruction, to add to their faculty portfolios, or to work toward promotion. Deans may request this service for improvement of faculty instruction, for continuing contracts, or for promotion consideration.

2. Assessment Forms

Assessment of Classroom Instruction

Pre-Assessment Observation Form

Name: _____

Observation Date: _____ Observation Time: _____

NOTES FOR PRE-OBSERVATION MEETING:

Description of Room:

Description of Students:

Class topic: _____

Goal(s) for the session?

1. _____

2. _____

Objective for the session? (What will the students be able to do/know by the end of the session?):

1. _____

2. _____

Teaching strategies: (What strategies/methods will you use to help the learners to reach this objective?):

1. _____

2. _____

3. _____

Assessment tool(s) (How will the students show that they know and can do what you expected of them?):

Instructor concerns/focus (What would you like the observer to pay special attention to?):

Post-Observation Conference

Date: _____

Time: _____

Location: _____

CLASSROOM INSTRUCTOR ASSESSMENT

Clarity

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Provides examples of each concept					
Uses concrete examples to explain					
Concretely defines/explains difficult or unfamiliar terms (or directions or procedures etc.)					
Clearly explains relationships among topics/facts/theories, etc.					
Repeats challenging/unfamiliar information					
Remains focused when answering questions (stuck to main topic)					
Clearly and legible writes on board/OH					
Relates usefulness of content to real world					
Repeats questions from student(s) so all hear					
Describes terms/concept/theories etc. in more than one way					
Emphasizes important points by pausing, raising voice, or speaking slowly, etc.					
Uses visuals with explanations					
Points out practical use of content					
Answers questions completely					
Shares tips to learning difficult information					
Shares key terms visually (board, OH, handout)					
Explains information in easy-to-understand terms/language					
Provides sample test questions					
Shares tips with students regarding taking exams, mastering content, etc.					
Clearly explains what is expected on tests and assignments					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT *Organization*

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Arrives early to class (may chat with learners before class)					
Begins class on time in an organized manner					
Arranges materials/information before class					
Shares session agenda/outline with class					
Clearly states session objective and significance of objective/activities (and periodically overall course objective) with class					
Reviews prior class material to prepare for class					
Clearly demonstrates transition from one topic/activity to the next					
Periodically summarizes material addressed during class session					
Adapts smoothly to back-up plan when necessary (uses board etc., if overhead malfunctions, addresses misunderstandings, provides further application activities, if needed)					
Ends class on time					
Reminds students of assignments, tests, projects, etc.					
Summarizes main points at the end of class					
Appears well-prepared for class (has materials/equipment available and organized)					
Organizes lecture/strategies so students can easily take notes					
Frequently checks student understanding					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT
Enthusiasm

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Speaks in expressive manner					
Smiles while teaching					
Shows respectful facial expressions					
Shows appropriate sense of humor					
Moves around room while speaking (does <u>not</u> stay behind podium)					
Gestures with arms, hands, head or body					
Appears relaxed with class					
Does not read continually from notes					
Answers questions completely					
Distracting mannerisms/habits (specify)					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT *Content*

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Uses several visuals during class					
Uses appropriate examples					
Relates content to previous knowledge					
Relates information to future, <u>practical</u> (real world) application					
Shares/encourages diverse/more than one point(s) of view					
Shares though-provoking information					
Shares up-to-date information in field					
Relates assignments to course or session objective					
Distinguishes between fact and opinion					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT

Interaction

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Praises student answers/uses probing questions to build on answers					
Uses a variety of strategies in class					
Encourages student participation					
Asks questions to entire class					
Answers questions clearly and directly					
Refrains from answering own questions					
Encourages students to answer each other's questions					
Encourages students to answer difficult questions by providing cues					
Constructively admits error or insufficient knowledge (i.e., suggests options to finding correct information)					
Respects/encourages different points of view					
Integrates students' ideas into class					
Guides student when s/he errs					
Provides ample demonstrations					
Provides frequent feedback (corrective feedback when needed)					
Shows respect/sensitivity to diverse learners					
Promotes active learning/student participation					
Encourages/facilitates relevant student-led discussion					
Asks questions of various levels (i.e., Bloom's Taxonomy)					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT
Pacing

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Does not rush students					
Asks/checks understanding before moving to next topic					
Covers an appropriate (not too little or too much) amount of material during class					
Does not engage unrelated issues/content during class (does not go off on tangents)					
Gives students enough time to finish tasks					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT
Speaking

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Speaks in an acceptable tone/volume					
Speaks clearly (does <u>not</u> stutter, slur, mumble words, or say "uh"/"um")					
Speaks at an appropriate pace (not too fast or too slow)					
Speaks with expressive manner (not monotone)					
Uses appropriate (non-distracting) gestures					
Maintains eye contact with students (i.e., does not talk to board, windows/walls)					
Speaks in respectful, easy-to-understand language					
Speaks slowly and clearly when covering difficult terms/ideas/content					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT *Rapport*

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Encourages student feedback					
Encourages student thought and participation					
Responds constructively to student opinions/contributions					
Encourages (and may present diverse points of view)					
Warm classroom climate (relates to students as people, uses appropriate humor and students speak freely)					
Responds to student misunderstanding or confusion respectfully					
Treats students/class equitably					
Listens effectively/closely to student comments/concerns/questions					
Tries to reach many kinds of students when teaching					
Encourages mutual respect, honesty, and integrity among class members					
Responds to distractions effectively					
Encourages constructive criticism					
Admits errors with honesty/integrity					
Provides constructive feedback					
Responds to students by name (in classes of 30 or less)					
Informally talks with students before and/or after class					
Remains accessible to students outside of class (i.e., office hours)					
TOTAL					
Comments:					

CLASSROOM INSTRUCTOR ASSESSMENT

Teaching Strategies

Instructor: _____ Date: _____

Course/Program: _____ Assessor: _____

Organization	Not Applicable	Level 1 Inadequate = 0	Level 2 Novice Marginally Adequate = 1	Level 3 Proficient Adequate = 2	Level 4 Accomplished Superior = 3
Encourages student participation					
Explains difficult content in more than one way					
Uses a variety of activities in class					
Provides demonstration/examples of given content, information, issues or theories					
Uses various media in class					
Holds attention and respect of students					
Adapts to any changes in student attention (i.e., increases student participation, changes strategy, activity, changes pacing, etc.)					
Demonstrates sincere interest/excitement about the course content/session					
Demonstrates effective teaching strategy for given content					
Demonstrates excellent content competence					
Provides opportunities for students to apply content (i.e., problems, case study, generate examples, etc.)					
Connects new ideas/theories or content to familiar ideas/theories or content					
Uses text content in class session					
Connects content to previous and upcoming class session					
Shares current developments in the field					
Connects content to assignments					
Asks questions to gain attention					
Uses "wait-time" when asking questions to class					
Teaches content that is not too difficult or easy for course description					
Continually engages students (listening, note-taking, or on-task discussion, activity, etc.)					
Decreases distractions constructively					
TOTAL					
Comments:					

**SECTION VI
ADVICE FOR
NEW
FACULTY**

A. WELCOME TO NSU

Greetings and welcome to NSU—we are glad you’re here. Whether you are new to teaching or just new to NSU, this next section should provide some good tips to get you started and ease the transition to this phase of your career. Your college probably assigned you a colleague to show you around and introduce you to various departments, but there are lots of resources available within the university and HPD to help you that you may not have seen or didn’t have time to fully appreciate in the whirlwind tour you received.

The Center for Teaching and Learning exists to help you become a great teacher, so please feel free to call on us with any questions you might have. Additionally, our website (<http://www.nova.edu/cwis/hpdtesting/ctl/>) is full of good information, including a series of self-directed modules to help you in the beginning stages of teaching. The HPD Library has a staff librarian assigned to each of the HPD colleges. You will want to meet your college’s librarian and learn about the resources the library has for your students. Many of the HPD colleges have their own faculty development programs targeted especially toward the needs of their faculty, so you will want to learn who that person is for your college and mark those programs on your calendar. The College of Health Care Sciences has a program for training faculty that has been quite helpful to those who have gone through it. The chair of your department or program can also be a useful resource for departmental policies and helping you discover where in the curriculum your particular course lies. Three very helpful newsletters are available for free online, *Faculty Focus* (www.facultyfocus.com), *The Innovative Instructor Blog* from Johns Hopkins University (<http://ii.library.jhu.edu>), and *Campus Technology* (<http://campustechnology.com/Home.aspx>). If you are completely new to teaching, you may want to do some additional reading to become more familiar with educational concepts and some of the recent advances in educational psychology. *How Learning Works: 7 Research-Based Principles for Smart Teaching* is an excellent resource. Your college or department should have a copy, or if you want a copy of your own, the book is not expensive. For a more in-depth guide to learning, you can access a free download of the e-book *Applying Science of Learning in Education: Infusing Psychological Science into the Curriculum* at <http://teachpsych.org/ebooks/asle2014/index.php>.

You may also want to challenge yourself to read the 50 most-cited articles in medical education. The HPD librarians very kindly created a one-click resource of the 50 most-cited articles based on an article in *Academic Medicine*. The list, and the article explaining the research conducted to find the most-cited articles, can be found at <http://nova.campusguides.com/hpdctl>

B. THE ONE-MINUTE COURSE IN EDUCATIONAL PSYCHOLOGY

If you did not take any education courses in college, you may feel uneasy about how to teach your students. Fortunately, you are beginning your teaching career at an exciting time in the study of teaching and learning. Advances in brain imaging from fMRIs have accelerated our acquisition of knowledge about how the brain works, and data analysis from massive online courses can provide second by second information about students’ learning behavior. Here is a list of seven ideas to start your exploration of teaching and learning:

Until brain imaging becomes a lot more sophisticated, the only way to know whether your students know what you want them to know is to ask them to do something observable with the information. Your statements of what you want them to do are called learning objectives and they have a specific format. Given _____ (conditions and resources) students will _____ (action verb—not know, understand, or appreciate) _____ (what) _____ (standard of execution). Here is an example of an objective. Given three pictures of different kinds of wrists sprains (conditions and resources), the student will name (action verb) all three sprains (what) in less than 10 seconds (standard of execution).

There are different levels of knowing. A well-known system for describing the difficulty of cognitive tasks is Bloom's Taxonomy. It's often represented as a six level pyramid. The lowest level is knowledge—your students can repeat what you just told them, select it out of a line-up, or label it if they see it again. The next level is comprehension—your students can demonstrate they understood what you told them because they can explain it in their own words. Next up is application—your students can use the information to solve a problem. Analysis is next—your students can use the information to sort or categorize or compare things. Synthesis—your students can use multiple bits of information to create something: a plan, a design, or an invention. Evaluation—your students can critique, evaluate, or judge something. Few educators can completely agree on all six levels, so many people use only two—recall and beyond recall.

The current view on memory is that it has three parts: short term memory, long term memory, and working memory. Short term memories last only seconds before disappearing unless the information is repeated or rehearsed. Long term memories can last a lifetime, although if they are not routinely retrieved, accessing them can take longer. The more often memories are retrieved from long term memory, the easier and faster they can be retrieved. The more associations a student has among bits of information, the more cues will be available to activate a memory. Working memory is made up of information retrieved from long term memory and information in short term memory. It's what allows you to know that you haven't yet added the baking powder to your cookie dough, and that the baking powder is on the top shelf behind the salt.

There are different kinds of memories, but the ones most important to you as a teacher are declarative and procedural. Declarative memories are characterized by being easy to bring to consciousness and by being easily expressed verbally. They allow one to answer straightforward questions such as: What is the capital of Zimbabwe? Procedural memories, on the other hand, contain information on when and how to do something. They are not easily brought to consciousness and are not usually easily expressed verbally. (Contrast how easily you can answer *Jeopardy!* questions with how difficult it is to describe in great detail how you tie your shoes.)

There are limits to how much processing your brain can do at the same time. The first researcher to articulate the concept, George Miller, in his 1956 article "The Magical Number Seven, plus or minus two: Some limits on our capacity for processing information" set the limit at five to nine bits. Subsequent researchers have refined the theory, drawing distinctions between what kind of information is being used and how well the research participant knows the information. Greater familiarity with small bits of information can allow a person to join them together into a larger

unit; that unit becomes one bit instead of several smaller bits. That consolidation is called chunking. (Consider instead of having to remember yeast, flour, salt, oil, water, and sugar, you could remember just bread. One thing instead of six.)

When planning your instruction, you want to be aware of your students' cognitive load—the amount of mental resources they have available to devote to the material they are learning. For instance, if you are teaching them statistics at the same time they are trying to learn a statistical software program, they might not learn either as well as they might have if they learned them sequentially. Trying to learn both at the same time could put too great a strain on their cognitive load.

If you do nothing in your classroom but lecture, your students are receiving information passively. Passive learning tends to be forgotten quickly. Instead, you want your students to actively do something with the information you give them. The large concept for this is active learning, and one of its current popular manifestations is the flipped classroom. In a flipped classroom, students do the assigned reading and video viewing on their own time then come to class prepared to discuss, debate, and solve problems. The advantage to the flipped classroom is that faculty members can see any difficulties students are having with the material and correct them before a misconception causes problems. Flipped classes began with engineering students solving problems in class (instead of at home), and the instructor for the class passing by each student, answering questions, and pointing out errors.

C. PLANNING YOUR COURSE

Developing What to Teach

The most important thing for you to decide when planning your course is what you want your students to be able to do at the end of your course. You will gain the most benefit if you are extraordinarily specific about your expectations. For instance, let's say you wanted your students to be able to perform a series of dance steps and you showed them what those steps were. However, when you assessed them at the end of the class, in addition to being able to repeat the dance steps, the students needed to be able to repeat them on ice while having snowballs thrown at their heads. You would probably be disappointed in the poor performance of your students, and your students would be angry that they weren't aware of the adverse conditions under which they were expected to be able to perform. This applies to mental operations as well as physical. For example, let's say you were going to test your students on their knowledge of American presidents. This question:

Who was the seventh president of the United States?

- A. Donald Trump
- B. Barack Obama
- C. George W. Bush
- D. Andrew Jackson

is much easier than

Who was the seventh president of the United States?

- A. James Monroe
- B. John Quincy Adams
- C. Martin Van Buren
- D. Andrew Jackson

Anyone with only a passing familiarity with American presidents could correctly surmise the answer to the first question, but a student would need to truly know the order of presidents (at least the early ones) to correctly choose Jackson.

While considering what you want your students to be able to do at the end of your course, you will also want to think about where your course falls within the curriculum. What should the students entering your class be able to do? For the course given after yours, what does that professor expect students to be prepared to do? For students who come to your class underprepared, you may want to make or find supplementary materials to get them up to speed. Put those materials on your course's Canvas site so students can access them whenever they want. That way, you have helped your students without sacrificing your classroom time.

Deciding How to Teach

If you were taught using a lecture-only methodology, you will probably consider that is a standard way to teach. However, you have many other options available to you. You can record lectures that are nothing more than background information and have your students watch them on their own time. That frees classroom time for clarification of difficult-to-understand concepts and application of the information for problem solving. When possible, let your students experience your thought processes by thinking aloud when solving problems. You will also want to engage in some peer-to-peer teaching (having students teach each other), because, as an expert in your field, you have automated some of the more basic habits of thought dealing with your subject matter, and you are no longer aware of the many mental steps you take to arrive at the conclusions you reach. (This is the same kind of automation that happens with physical tasks. When you first started to drive, you had to think very hard about how to do it. Now, as an experienced driver, you can hold a conversation, drink coffee, and plan your day all while dodging the crazy drivers on I-95.)

Developing a Schedule for Your Course

Students use how much time you spend on a topic as a cue for how important you think the topic is. Your students will be angry and frustrated if you spend hours lecturing on Topic A, but test most heavily on Topic B. You may want to develop a three-tier system for evaluating the importance of topics you want your students to learn. Need to know, nice to know, nuts to know. Spend most of your time on the need to know material.

Developing Materials

You don't have to be a technology genius to create materials for your class. A webcam can record you at your desk for simple lectures. Ideally, make your how-to lectures no longer than 3-4 minutes and make the titles descriptive enough for your students to be able to choose which ones they want to listen to repeatedly. Feel free to post links to helpful YouTube videos. If you want higher production values, collaborate with the IZone to produce material for you.

Warning—be prepared to wait a month or so for your materials to be developed by them. Last, be sure to meet with your HPD librarian to see what is available for your students. The library has a wealth of videos on anatomy, clinical procedures, and disease presentations.

Developing an Assessment Plan

Research has shown that testing more frequently helps students remember more and retain information longer, even without additional studying. So, instead of giving only a midterm and final, consider more frequent low-stakes or even no-stakes testing. You could put some of your quizzes online so that students can test their understanding of material without you having to give up classroom time. Be sure to check if there are any trends in the questions students answer incorrectly so you can address their misconceptions. And you will want to make at least some of the tests cumulative (and let your students know they will be cumulative) to counteract students' tendency for binge and purge studying.

You will want to consider what kinds of assessments best serve your purposes. Multiple choice tests require serious preparation to create quality questions, but they can be quickly scored by the Testing Center and you will receive an analysis of how your students performed on each question—valuable information for refining your questions and lectures. Essay exams may not require much preparation, but you will spend a lot of time scoring them and giving feedback. Fill in the blank questions will require hand scoring. Additionally, you will need to make a policy decision on misspellings and illegible writing and inform your students of these policies well in advance. The Center for Teaching and Learning website has some excellent information on creating educational tests (<http://www.nova.edu/hpdtesting/ctl/class-tests.html>).

You can make some of your grading decisions easier if you develop rubrics for scoring different kinds of assessments. Check out this post for ideas: *2017 Quick Tips-Tools for Creating Rubrics* (<http://ii.library.jhu.edu/2017/06/14/quick-tips-tools-for-creating-rubrics/>)

D. TEACHING YOUR COURSE

Outside of the Classroom

Provide office hours in your syllabus and encourage your students to visit you if they have questions about the course. You may want to maintain a log of the questions students have in case you can discover common threads of misperceptions (those can also serve as excellent distractors in multiple choice tests) and address those in class. If you teach more students than you can advise individually, you may want to create an additional time and place for your entire class to have access to you before tests to clear up any lingering confusion.

The first few years you teach the course, ask your students to write messages to future students for what it takes to be successful in the class. Your students' insights will be helpful to the next classes of students, but they will also be helpful to you as you strive to become clearer, more

organized, and more understanding of the difficulties your students encounter with the material you teach.

Inside the Classroom

From the first day of class, you establish the tone and atmosphere of your classroom. Rules and policies should be set forth in your syllabus, but you will not be able to think of everything in your first few years of teaching. Ask your more established colleagues if they would share some of their insights for classroom management with you. You will need to have policies on absences, tardiness, missed exams, turning in late assignments, and you will need to make sure your policies are in line with your college's student handbook. A *Faculty Focus* post has an excellent article for dealing with common classroom excuses

<http://www.facultyfocus.com/articles/effective-classroom-management/student-excuses/>

Humor can be a great way to relieve tension in the classroom, but be sure never to make a student the butt of a joke. Students will appreciate some self-revelation from you, but it is best if you can speak about yourself when you were a student of this material and describe your struggles or tricks for studying. Your students do not need to know a lot about your personal life. Perhaps most important is to make your classroom a safe place for students to express confusion and to make mistakes. Don't belittle your students or make them afraid to ask or answer questions.

Feedback

You will want to get feedback from your students at every opportunity in order to strengthen your teaching. The tests you give your students are one source of information to learn what they did and did not understand. You get additional information from the online quizzes you post. Even easier is to ask your students questions during a lecture. Call out questions, wait for responses (see the section in this handbook on questioning techniques for some excellent advice), and evaluate whether further explanations are needed. (Remember that the explanations do not have to come from you; they can be provided by other students.) More formally, you can solicit specific feedback from your students. Devote a few minutes at the end of class for your students to make a few notes on the "Muddiest point in the lecture" and turn it in to you on their way out of the classroom.

Your students want feedback from you as well, and not just in the form of grades. Verbal attacks (e.g., good job!, yes!, alright!) go a long way to creating the kind of class students attend even without a mandatory attendance policy. If the student gives an incorrect response to a question, your reaction will tell your other students whether you are a jerk and to never to attempt to answer one of your questions, or you are an OK person who actually cares about whether they learn and that it is alright to try and fail in your class. Humans love to be quizzed—look at all the trivia-based game shows—as long as they feel they have a chance at getting the question right and the penalties for being wrong are not too severe. In addition to the feedback you give during class, you may find opportunities for giving feedback outside of class. If you have large numbers of students, you may want to create several stock feedback phrases and cut and paste them into appropriate places on students' work. However, if you have small classes, you might want to experiment with recorded audio feedback. You can create audio files and

attach them to e-mails to your students. The audio file gives your students a stronger sense of you than does written feedback and helps your students feel connected to you.

E. EVALUATING YOUR COURSE

Self-Reflection

When your first semester is over, spend an afternoon or two thinking about the lessons you have learned and making resolutions (“Got to try that technique again—it worked great!” and probably a few “I’m never doing ____ again!”). Try putting yourself in your students’ shoes and think about what you (the teacher) could have done to help them master the material.

Last, if you had a rough semester you might feel that you have done your job but your students did not do their job of studying and preparing. The common phrase is “You can lead a horse to water, but you can’t make it drink.” However, as education writer Dr. Maryellen Weimer pointed out, “You can put salt in the oats.” Spend some time considering what processes and what structures you can put into your course to make your students thirsty enough to want to drink the water you give them.

Student Evaluations

Most of the colleges in HPD use an online evaluation system created by OIIT. It is not a perfect system, but it is pretty good. Occasionally you will find that the course you worked so hard on was not evaluated just because of an oversight, or that the wrong person was listed as the instructor for your class. Sometimes students will mark “Strongly Disagree” when they meant to mark “Strongly Agree.” So, even though you may have been looking forward to the good reviews your students intimated they would give you, do not be crushed if it turns out you were not evaluated at all, or if many of your students gave you a less than stellar rating. Your best defense against these problems is to learn who sets up the evaluations in your college or department and make sure that your course(s) will be evaluated and you are listed as an instructor. As for protecting yourself from careless students, speak with your entire class, show them the evaluation forms online, and point out the direction of the Likert scale. It will probably not solve the problem completely, but it will help.

Classroom Observations

The Center for Teaching and Learning will be happy to perform classroom observations and give you feedback on what we see; just invite us to a class. The previous section of this handbook gives sample feedback forms and policies. Unless your dean requests that we perform an observation on his/her behalf, your dean will never see our feedback—it is private to you.

Additionally, you may want to observe other teachers’ in their classrooms. The Center for Teaching and Learning has several faculty members whom we believe would be excellent role models. Please contact us if you would like the name of one of our recommended faculty members, and then contact that person for permission to visit a class.

F. YOUR SCHOLARLY LIFE

If you are coming to NSU straight from pursuing a degree, you may find yourself missing the scholarly life you were leading and wishing your mentor was easily available for guidance. The following blog post contains some helpful information and insights for developing your own research agenda. “The role and purpose of a research agenda” from *Higher Ed Professor*, September 25, 2017. Used by permission of Michael Harris, Ed.D. See the original archived at <http://higheredprofessor.com>

The role and purpose of a research agenda

A research agenda plays a valuable role in helping design scholarly activities for graduate students and faculty. Simply put, a research agenda means identifying the areas you will research and the methodologies you will use to answer questions. You probably have heard from professors in graduate school and beyond that you can't research everything so you need to pick what you can feasibly study. Moreover, a scattershot approach can keep you from focusing on important questions and pull you in a number of different directions. In today's post, I will describe research agenda and why they can be of benefit for researchers.

Just as a meeting agenda provides the items to be discussed during a meeting, a research agenda provides clarity and a framework for making decisions regarding your research activities.

It can be tempting to jump on any research idea that comes along and seems interesting.

Rather, what you need is a lens through which you can consider new ideas and projects as they come along.

A clearly articulated research agenda provides boundaries for you to make decisions regarding your scholarly work.

New projects will undoubtedly be attractive at first, but they should be considered in light of your agenda as the first step in reviewing them.

Only once the new idea is in line with your agenda do you move on to consider if you have the time and desire to move forward.

In addition to serving as a useful guide, research agenda help others understand and view the research work that you do.

Research agendas are comprised of a strand (or possibly two or three related ones) of research that you explore. These may be topics or questions that your research seeks to explore.

Many people that I have know do not have a single line of inquiry that forms their research agenda.

Everyone has different and even related interests for their scholarship so you may not have a single, isolated line of research that you explore.

Even tenure committees (that value firm agendas) realize that tenure candidates may have two related concepts that they studied extensively in graduate school, had experience in working on in a laboratory, or were part of their dissertation.

As long as you can articulate each line of inquiry, the relationships between each line, and demonstrate your expertise in the two (or at most three) lines of inquiry that you are studying, most everyone in higher education will find this appropriate.

However, if your research appears to be a collection of random projects lacking a common thread between them, hiring and tenure committees will rightly question whether you have demonstrated expertise and developed a level of sophistication in your research.

For pre-tenure faculty, research agendas can be useful for helping you build up a reputation of expertise and work around a specific topic.

College and universities want to see that pre-tenure are establishing or have achieved a national reputation in the field of expertise.

A tightly focused research agenda helps to achieve prominence by focusing on a specific area.

If someone's research bounces around among a variety of relatively disconnected projects, then it becomes difficult to establish and validate areas of expertise particularly to external reviewers.

Moreover, working on similar research studies creates significant efficiencies. For example, you do not need to learn a new body of research in order to write the literature review and you are already familiar with journals that publish on your topic.

Overall, if you maintain a sense of consistency with your topic, you can more easily and quickly publish your research.

If you are struggling with articulating your own research agendas, I recommend studying the careers of major researchers in your discipline.

To do this, get a copy of the vita of a significant and well-respected researcher.

Next, look at the years prior to when the established scholar received tenure.

You are looking for how their line of research progressed throughout their career. Research takes a while to build up knowledge and data to answer specific questions.

Over time, as methodologies advance and the knowledge base grows, you will probably see research questions morph and change.

When looking at a full professor with 25 years of research experience, many pre-tenure faculty fail to fully appreciate how research agendas evolve. These professors did not magically come out of graduate school with the focus and expertise they possess today.

Studying these other agendas can help you learn how research agendas evolve over time, which can help in creating your own research agendas.

Establishing a research agenda and sharing this with professors, mentors, and colleagues provides an important groundwork and foundation for your research activities and I highly suggest taking the time to think about and articulate your own agenda.

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