In this issue

Upcoming Events

Faculty Development Presentation

All HPD faculty are invited to attend a presentation/luncheon - Chancellor's Dining Room (5th floor of the Terry Building) hosted by the Center for Teaching and Learning.

November 2, 2005. 12:00 - 1:30 p.m. Dr. Maryellen Maher from the Fischler School of Education and Human Services will speak on Philosophy of Teaching. RSVP to Kathleen Hagen at x1235 by 10/31.

Faculty Research Development

All HPD faculty are invited to attend a presentation/luncheon - Chancellor's Dining Room (5th floor of the Terry Building) hosted by the Faculty Research Development Committee. RSVP to Kathleen Hagen at x 1235 three days before these events.

October 26, 2005. 12:00 - 1:00 p.m. Dr. K.V. Venkatachalam - The Element **S** (Sulfur) from Early Earth to Organism**S** of Modern Life.

November 29, 2005. 12:00-1:00 p.m. Dr. Joseph Pizzimenti - Diabetes and Vision.

December 14, 2005. 12:00-1:00 p.m. Dr. Kristina Beekhuizen - Sensory Augmentation in Recovery of Function in Spinal Cord Injury.

I AM A TREE, I CAN BEND
By Stan Cohen, Ed.D.

This is the first of a five-part series on teaching and learning styles. The information that we present is taken from the book entitled I Am a Tree; I Can Bend: Adapting Your Communication Style to Better Suit Your Students' Needs, by Stanley R. Cohen.

It doesn't take years of exposure in the classroom to recognize that students have differences in personalities and learning styles. Using one style of communication all the time is not effective in getting through to every student.

The aim of all instruction is to increase learning to the maximum possible level for every student. Matching our teaching styles to the learning styles in our classes would be great progress. So, how do we know what our teaching styles are? One approach is to have our personalities analyzed. A convenient tool to do this is the Myers-Briggs Type Indicator, based on Carl Jung's theory of personality.

There are four mental operations that seem to affect teaching style. They are thinking, feeling, sensing, and intuitive. A description in this text of the corresponding teaching styles based on these personality factors is presented so that teachers can identify the style they are most comfortable using; this is followed by a description of the four basic learning styles that most students display.

The issue then becomes, how do we mesh the teacher/student styles and maximize communication? We have two options, but these should not be viewed as either/or choices. Ideally, both methods will be used. One option is to help students who are stuck in one style to adapt to the other three modalities and teach them the strategies they need to accomplish this. This would broaden their communication abilities and be a valuable life skill.

The other option is to modify our own communication styles and develop the ability to shift gears when we look around our classroom and see students who are disengaged from learning. It is this option that this text will explore in depth.

Teacher style modification requires changing certain behaviors. These changes can be anticipated and planned for from the earliest stages of lesson planning and the creation of learning objectives. Developing the ability to shift teaching style is more than a "nice idea I might try someday." It is crucial to effective teaching. Even when there is a match between teacher/student styles, the same activity repeated over and over will become boring, will decrease motivation, and will decrease learning. So, not only is it necessary to shift teaching styles to get through to every student, shifting teaching styles also helps those who are comfortable with the way the teacher is managing the learning environment to move into a higher level of cognition and avoid the pitfalls of tuning out the teacher.

Over the next four issue of the Beacon, we will be delivering descriptions of the four learning styles meshed with the four teaching styles. We will accompany this discussion with practical suggestions for classroom and clinic teaching. The series-overarching goal is to improve communication, develop more effective teaching, and ultimately enhance learning.

ASK THE EXPERTS:
"BASIC ITEM ANALYSIS FOR MULTIPLE CHOICE TESTS"
by Patrick Hardigan, Ph. D.

We often receive questions about item statistics for multiple-choice test. This article offers some suggestions for the improvement of multiple-choice tests using "item analysis" statistics. These statistics are provided by NSU's testing service.

The basic idea that we can capitalize on is that the statistical behavior of "bad" items is fundamentally different from that of "good" items. Of course, the items have to be administered to students in order to obtain the needed statistics. This fact underscores our point of view that maintaining and developing a pool of "good" items from which future tests will be drawn in part or in whole can improve tests. This is particularly true for instructors who teach the same course more than once.

WHAT MAKES AN ITEM PSYCHOMETRICALLY GOOD?

In answering this question, it is desirable to restrict our discussion to tests that are written to cover a unified portion of course material such that it is unlikely that a student would do well on one part of a test and poorly on another. If this latter situation is the case, the comments that follow will apply only if the corresponding topics are tested separately. Regardless, this approach would be preferred, because, otherwise, scores would be ambiguous in their reporting of students' achievement.

Once the instructor is satisfied that the test items meet the above criterion and that they are indeed appropriately written, what remains is to evaluate the extent to which they discriminate among students. The degree to which this goal is attained is the basic measure of item quality for almost all multiple-choice tests. For each item the primary indicator of its power to discriminate students is the correlation coefficient reflecting the tendency of students selecting the correct answer to have high scores. This coefficient is reported by typical item analysis programs as the item discrimination coefficient or, equivalently, as the point-biserial correlation between item score and total score. This coefficient should be positive, indicating that students answering correctly tend to have higher scores. Similar coefficients may be provided for the wrong choices. These should be negative, which means that students selecting these choices tend to have lower scores.

Alternatively, some item analysis programs provide the percentages of examinees scoring in the top, middle, and bottom thirds who select each option. In this case, one would hope to find that large proportions of the high scorers answered correctly, while larger proportions of low scorers selected the distractors.

The proportion of students answering an item correctly also affects its discrimination power. This point may be summarized by saying that items answered correctly (or incorrectly) by a large proportion of examinees (more than 85%) have markedly reduced power to discriminate. On a good test, most items will be answered correctly by 30% to 80% of the examinees.

A general indicator of test quality is the reliability estimate usually reported on the test scoring/analysis printout. Referred to as KR-20 or Coefficient Alpha, it reflects the extent to which the test would yield the same ranking of examinees if readministered with no effect from the first administration, in other words, its accuracy or power of discrimination. Values of as low as .5 are satisfactory for short tests (10 - 15 items), though tests with over 50 items should yield KR-20 values of .8 or higher (1.0 is the maximum). In any event, important decisions

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Quotes to Brighten Your Day

All of the quotes in this issue are by William Faulkner.

All of us failed to match our dreams of perfection. So I rate us on the basis of our splendid failure to do the impossible.
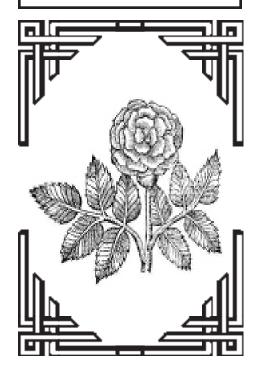
Always dream and shoot higher than you know you can do. Don't bother just to be better than your contemporaries or predecessors. Try to be better than yourself.

I believe that man will not merely endure. He will prevail. He is immortal, not because he alone among creatures has an inexhaustible voice, but because he has a soul, a spirit capable of compassion and sacrifice and endurance.

The end of wisdom is to dream high enough to lose the dream in the seeking of it.

The man who removes a mountain begins by carrying away small stones.

I decline to accept the end of man.

Stan's Soap Box

In recent years we have come to realize that although a great deal of learning occurs in the formal classrooms, much of the understanding of content is learned informally when students teach each other. Where does this happen? In the cafeteria while sharing lunch, in the library study rooms, in the atria. How does this happen? Via cell phones, buzzing late into the night; instant messaging through the Internet; or old-fashioned face-to-face study group sessions. Every day, everywhere I look, I see students teaching each other and having a great learning experience.

Given that students teaching students is such a great way to learn, does that render the instructor unnecessary or obsolete? Should we give students a textbook and a meeting place and then tell them to "Have at it, go learn this material!"? Of course not. It would make as much sense to hand visitors to the Amazonian rain forests a machete and expect them to explore the region on their own. The Amazonian visitors need a guide, someone familiar with the forest; someone to tell them where the poisonous snakes are, which rivers have piranha, and which fruit is safe to eat. The instructor serves the same function for the student. An instructor can point out the pitfalls of difficult concepts, avoid the quicksand of erroneous conclusions, and lead students on a faster path to mastery without unnecessary detours for trial and error learning.

Right now you may be saying to yourself, "Sure, that's what I want to do. But how can I do it with 250 students in my class? And how can I do it when I have so much material to cover?" Let's tackle these problems one at a time.

First, how can instructors give individualized instruction to a 250-student class? They can't. But, they can give instruction that is sensitive to the differing learning styles, backgrounds, and abilities of their classes. Every 20 minutes or so, take a 3-minute break to ask your students, "What are your questions?" Those breaks serve multiple functions. First, they allow students who haven't grasped concepts a chance to catch up. When clarifying a point for students, don't just repeat what you said earlier slower and louder. Think of different ways of explaining it, ways that will help students with different learning styles understand the concepts. Second, the 3-minute question break will take students out of a passive learning mode and into an active learning mode. Third, the break will reset the learning curve, which tends to fall off sharply after 20 minutes of lecturing. Fourth, that 3-minute break will result in a quieter, more focused classroom. When students know they will have a chance to ask their instructor questions, there will be less chatter among students asking each other "What does he/she mean?" Students teaching students is great, but you don't want to compete with it during your lecture.

Another great technique to try in that 3-minute break is to ask a student to explain to the class in his or her own words what you've just taught. An instructor sometimes forgets what it was like to be new to material and may not mention every detail because it seems obvious to him or her. (Imagine this exchange. Instructor: "Of course you have to put the solution in the beaker, it doesn't do any good outside it!" Student: "But you never said to!" Instructor: "Do I have to tell you everything?") This is another way in which students teaching students really helps the learning environment.

Next, how can an instructor cover the vast amounts of information that students need to know in order to become competent health care providers? The first thing to do is realize that telling students information is not the same thing as helping them learn it. Numerous studies have shown that people forget 50% of information they are told within a few minutes of hearing it. After a few weeks, even more information is lost. However, when people understand information, when they can relate it to information they already know, when they have realized (or been shown) the importance and usefulness of it, they retain it much better. Thus, the instructor's work is first to convince students of the usefulness of information, then to relate it to already known material and show the broad outlines of concepts, then to help students make the information their own by using it in a variety of ways.

If you use this approach, will you be able to lecture on every detail on your handout? No. This is where students teaching students comes into play. Let your students deal with simple recall of factual material. Their study groups are a great place to drill each other and test their memorization. An instructor has a higher purpose: illuminating difficult material, providing insights, relating concepts. To continue the explorer/guide metaphor, the instructor may show the way, but the student still has to walk the path.

Reminder:

Mark your calendars for the

**Faculty Development Presentation
"Philosophy of Teaching"**

November 2
See Page 1
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for details

concerning individual students should not be based on a single test score when the corresponding KR-20 is less than .8. Unsatisfactorily low KR-20s are usually due to an excess of very easy (or hard) items, poorly written items that do not discriminate, or violation of the precondition that the items test a unified body of content.

IMPROVING THE ABILITY OF ITEMS TO DISCRIMINATE

The statistics provided by NSU's test scoring service provide the information needed to keep a record of each item with respect to its performance. One approach is simply to tape a copy of each item on a 5 x 7 card with the test content area briefly described at the top. In addition, tape the corresponding line from the computer printout for that item each time it is used. Alternatively, item-banking programs may provide for inclusion of the proportions marking each option and item discrimination coefficients along with each item's content.

A few basic rules for item development follow:
1.)Items that correlate less than .15 with total test score should probably be restructured. One's best guess is that such items do not measure the same skill or ability, as does the test on the whole or that they are confusing or misleading to examinees. Generally, a test is better (i.e., more reliable) the more homogeneous the items. Just how to restructure the item depends largely on careful thinking at this level. If there are any apparent violations, correct them on the 5x7 card or in the item bank. Otherwise, it's probably best to write a new item altogether after considering whether the content of the item is similar to the content objectives of the test.
2.)Distractors that are not chosen by any examinees should be replaced or eliminated. They are not contributing to the test's ability to discriminate the good students from the poor students. One should not be concerned if each distractor is not chosen by the same number of examinees. Different kinds of mistakes may very well be made by different numbers of students. Also, the fact that a majority of students miss an item does not imply that the item should be changed, although such items should be double-checked for their accuracy. One should be suspicious about the correctness of any item in which a single distractor is chosen more often than all other options, including the answer, and especially so if that distractor's correlation with the total score is positive.
3.)Items that virtually everyone gets right are useless for discriminating among students and should be replaced by more difficult items. This recommendation is particularly true if you adopt the traditional attitude toward grade assignments that grades more or less fit a predetermined distribution.

By constructing, recording, and adjusting items in this fashion, teachers can develop a pool of items for specific content areas with conveniently available resources.

SOME FURTHER ISSUES

The suggestions here focus on the development of tests that are homogeneous, that is, tests intended to measure a unified content area. Only for such tests is it reasonable to maximize item-test correlations or, equivalently, KR-20 or Coefficient Alpha (reliability), which is the objective of step 1 above. The extent to which a high average item-test correlation can be achieved depends to some extent on the content area.

It is generally acknowledged that well constructed tests in basic sciences such as mathematics are more homogeneous than well-constructed tests in social sciences. This circumstance suggests that particular content areas have optimal levels of homogeneity and that these vary from discipline to discipline.

A second issue involving test homogeneity is that of the precision of a student's obtained test score as an estimate of that student's "true" score on the skill tested. Precision (reliability) increases as the average item-test correlation increases, all-else the same; and precision decreases as the number of items decreases, all else the same.

These two relationships lead to an interesting paradox: often the precision of a test can be increased simply by discarding the items with low item-test correlations. For example, a 30-item multiple-choice test administered by the author resulted in a reliability of .79, and discarding the seven items with item-test correlations below .20 yielded a 23-item test with a reliability of .88. That is, by dropping the worst items from the test, the students' obtained scores on the shorter version are judged to be more precise estimates than the same students' obtained scores on the longer version.

The reader may question whether it is ethical to throw out poorly performing questions when some students may have answered them correctly based on their knowledge of course material. NSU Testing Center's opinion is that this practice is completely justified. The purpose of testing is to determine each student's rank. Retaining psychometrically unsatisfactory questions is contrary to this goal and degrades the accuracy of the resulting ranking.

Kehoe, Jerard (1995). Basic item analysis for multiple-choice tests. *Practical Assessment, Research & Evaluation, 4*(10).

FURTHER READING
Airasian, P. (1994) *Classroom Assessment*, 2nd Edition, NY: McGraw-Hill.
Brown, F. (1983), *Principles of Educational and Psychological Testing*, 3rd edition, NY: Holt, Rinehart & Winston. Chapter 11.
Cangelosi, J. (1990) *Designing Tests for Evaluating Student Achievement*, NY: Addison-Wesley.
Grunlund, N. (1993) *How to make achievement tests and assessments*, 5th edition, MA: Allyn and Bacon.

DIRECTOR'S CORNER
by Kaye Robertson

A recent updating of the Pew Internet and American Life Project, "The Internet Goes to College," produced results that will come as no surprise to the majority of college faculty. In response to a question posed to faculty members, "Has the internet changed the quality of your students' work?" 41% stated that the quality had worsened while only 21% said the work had improved. Almost half of the respondents reported that plagiarism has increased with the increasing dependence on the internet.

The dependence on Google and similar search engines has greatly changed the way most of us find information. The ease of searching and the vast range of available resources has made the Web into an information "Swiss Army Knife," providing information on any question you can pose. While librarians and other academics despair at the lack of discernment between quality and junk websites by their students, the students themselves see the internet as a quick and easy way to get assignments done and keep the instructors happy.

One of the challenges, then, for educators who are training future healthcare providers, is to mold them into wise information consumers who can distinguish authoritative sites and base their medical decisions on current, evidence-based resources. They also need to be aware of the best resources that are available to them, first as students, then as health professionals, and to equip themselves with the tools which will allow them to retrieve the information they need.

In your role as instructor, you must determine whether "good-enough" results are acceptable. Are your students allowed to cite multiple websites as their sources, or do you demand research based on evidence found in peer-reviewed medical journals? The meta-search engines certainly have their place, as long as the user understands some limitations. A search using Google Scholar, for example, will turn up articles indexed by PubMed, but it can take months for articles to appear in the Google search. The algorithm for ranking results may include the articles that have been most frequently cited near the top of the list, but it may also rank current research much lower. When it comes to finding a specific name or phrase, these search engines are unbeatable; however, for anything but simple keyword queries, even the best search engines can be surprisingly ineffective.

The databases subscribed to by the HPD Library are chosen to support the specific needs of our students and faculty. Complaints from students that library databases are "too complex" are usually the result of little experience in using the subscription databases. From the HPD Library homepage (www.nova.edu/hpdlibrary) NSU users have access to more than 200 excellent databases, covering subjects from general medicine (Medline, CINAHL, MDConsult) to current research trials (Cochrane Databases) to drug information (Micromedex and Lexi-comp) to alternative/complementary therapies (AltHealth Watch, Natural Medicines). Subject-specific databases include MANTIS (Manipulative medicine), Anatomy.tv, OT Search, and SPORTDiscus, to name a few. Perhaps the most often-mentioned database for doctors in the field is UpToDate, a well-respected database of reviews of current research and therapies.

Equipping students with the best tools for research is important, just as equipping them for handling medical procedures is essential to their professional success. By teaching them to be discerning users of the increasingly complex medical/health information landscape, we are preparing them to be able to be competent health professions with the ability to be well informed, to make judicious choices when sorting through the abundance of available medical information, and to make the best decisions concerning the care of their patients.

The librarians at HPD Library are available to help you and your students with their research needs. Please call on us if you would like individual help yourself or if you would like for one of us to make a class presentation. Alerting the library in advance when you have assignments requiring research will help us be of better service to your students. You may request help online at http://www.nova.edu/cwis/hpdlibrary/iltrequest.html, call the Reference Desk at x3108, or stop by the library for a brief or in-depth session.

Ideas for our next issue

If you have a great teaching technique, let us know and we'll share it with your colleagues. Caught in the act - tell us good things you've seen faculty do!