

To: Interested Faculty
Fm: Paul Marshall
Subj: The use of student notes while taking tests

I received Peter Schmidts email about what we all thought the value or possible problems were with allowing notes in the classroom during a quiz or test. I queried a list-serve I belong to. These folks are all faculty and administrators from colleges and universities around the country. I found their responses informative. I hope you do as well.

My original posting follows:

A discussion is afoot here about allowing students to bring their class notes for use during an exam. The discussion centers on these points: the value to student learning and retention, breach of test taking etiquette, does the practice reinforce good note taking, one summary page of notes 'vs' notes in general, does it cause grade inflation and the general gasp of surprise that one would even bring up the practice in polite company. Does any one know of any research on the practice, have helpful comments on the practice?

(response #1)

The first question is "What is the purpose of the test?" If it is used only to check recall of information (presuming this to be important), then the use of notes defeats its purpose. If the test is used to provide evidence of other than memory, then notes can be used as raw material for responses to more involved problems, essays, and other items. In this case, having notes reasonably models real-world situations where reference to correct information is a necessary part of a problem-solving or other process. How often are workers in almost any context asked to do everything for memory? Particularly in professional positions (for which college is supposed to prepare us?) do people have notebooks or other more sophisticated devices for recording and referring to important information? Almost always.

The etiquette issue is valid only if the test is used as a vehicle to separate those more skilled from those less skilled either in memorization or in problem solving. That is, if the purpose is competitive, then having notes is "cheating". If one believes this, then one probably also refutes accommodations for LD or other students as a form of cheating: letting those not capable get by giving them special breaks. I am not convinced that such a purpose has merit. I agree with Lee Chronbach, who said that education

should be a talent development effort rather than a competition.

Grade inflation is a misused term in many cases and it's no different here. If good tests/assessments allow students to demonstrate skill or mastery, and if those tests replicate real conditions outside the classroom, and if our objective is to help students achieve the highest levels, then we want high grades. The correlation of GPAs to achievement should be high. It's only when we have poor tests or unjustified rationale for giving them, that we move in the direction of high, but meaningless grades.

Finally, as we know from years of dialogue, the most valuable function of testing is not intellectual survival of the fittest, but rather providing opportunities for teachers and students to better understand what they do not understand.

Mike

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(response #2)

I teach sociology and give in-class essay exams that allow students to use notes and books.

I developed this method of examination after teaching online courses and realizing that students taking online courses had access to all kinds of materials so I had to design an exam that did not ask for specific rote information, but instead asked them to craft an essay using theories and concepts. This is, in fact, what I claim my students should be able to do when they finish the course (not memorize material and write it in a blue book as fast as possible -- later to be totally forgotten).

So, I tell the students they will be given a question, usually some scenario, case, or problem, and I ask them to analyze the case using all the relevant concepts, theories, and ideas we have discussed in class and from readings. There is no "answer" that can be "looked up". This is application to problems and cases. Sociologists do not practice their discipline without notes and books; so I do not ask my students to do this either.

I think this method is much closer to what is referred to as "authentic assessment". I am assessing and grading my students on their ability to demonstrate the capacities I expect them to develop in a sociology class.

The students also have opportunities to do this kind of creative work on regular in-class and out-of-class assignments and exercises.

Yes, grades tend to be better and, more important, I think they learn more that actually lasts beyond the course and which can be transferred to other learning situations.

David Jaffee
Associate Dean
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(response #3)

I don't know of the research but in my own experience in teaching a freshman level college success course the notes and the level of test questions both need to be considered. I gave a test recently for which I told students they could use their notes but I knew that their notes would not be very helpful because I had prepared exam questions at the interpretative level of critical thinking about above. I had wanted to make the point that notes are usually most valuable for literal level information -- we generally don't have our processing in our notes. Students in the class were then able to evaluate in which courses notes would have been helpful for exams and in which courses their class notes were not particularly helpful.

If students are tested over the information literally, then their notes are often good resources for them. I also have given open note tests when I want students to have access to basic definitions, etc. even though that information is not what I am testing them on, it is often the foundation of higher order questions.

Susan

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(response #4)

This may be slightly off the specific question asked, but perhaps will spark discussion. I've used something similar to this regularly in my upper-level literature classes: the exams are open-book and open-note, and I give students the questions in advance; I give three questions, and students choose which one they want to answer (and only one). They must write the essay answers in class, and I limit the answers to 6 bluebook pages. They can bring an outline of an answer into class, but they must do the writing there. I use bluebooks with special stamps (different each time) to ensure that they're not writing the questions in advance.

I've found this does a couple of things: I give them pretty tough questions, which always ask them to relate two or three of the texts we've read in ways that we haven't necessarily discussed with those specific texts--though we've always discussed the theme in general at some point during the semester. By getting the questions in advance and having the books/notes in front of them, the students have had the chance to put a lot of thought into their answers, without the risk of all-night efforts on take-home exams. I've really been pleased with the depth of thought that students have been able to include, and they've been able to quote directly from the texts with authority for their answers (though there's the danger of spending too much time hunting for quotes if they're not prepared).

The grades students receive have generally been a range I would call typical for other more orthodox exam methods I've used, and I greatly prefer this approach to fill-in-the-blank types or other similar memory-based test questions.

I've conducted no systematic study of the process, so this is only anecdotal. But I've been pleased with the results. Students hate them at first, but after a while they don't mind them (well, some students don't mind them). Years later one student said to my wife, "he gave difficult exams, but I learned a lot from them." So for at least one student, the exam itself was a learning experience--which I hope would be true for all tests.

Jim Postema

James Postema
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(response #5)

As a new faculty member, I have little empirical or substantive input to this. But I do have an anecdote. Throughout High School, I was privileged to have a succession of excellent biology teachers. I loved biology. The learning was difficult and exciting, the tests were open-book and open-notes. (And they were NOT easy! But they were, in fact, fun for me to take). With these wonderful experiences of biology, I went to college as a biology major. And, within less than 8 weeks, I was out of that department. Exposure to the litany of facts-to-be-memorized and multiple-choice questions took the juice and excitement right out of it for me. Blech.

While some learning-of-facts is essential to education, I think that the closed-book test is an increasingly arcane idea, as access to reference information becomes simple. To my mind, it seems that a more up-to-date pedagogy has our students learning facts by using them, and memorizing them 'accidentally', because they've been used enough.

To this day, I remember nothing of college biology. But I learned the Krebs Cycle in 9th grade, and while I cannot remember the specific compounds and by-products, I know it to be a central process in metabolism in both plants and animals, a counter-part to photosynthesis in plants. And I know metabolism can be aerobic or anaerobic, with lactic acid a by-product of anaerobic processes.

Not bad for an open-book open-notes 9th grade bio class, eh?

Tara Tayyabkhan
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(response #6)

A few days before the final exam for my course, I would make an announcement in class.

I would allow students to bring one (1) officially sanctioned 3"x5" 'cheat sheet', filled front and back to the final exam, which was comprehensive for the semester. I had two 'official' sized boxes printed on the back of the course packet. All students were to cut out and use these for this purpose. I had provided two so they could share one with a classmate, or in case they duffed one while making it.

The were allowed to write as much as they could fit on either side, but it had to be hand-written, and they were not allowed the use of magnifying glasses, jeweler's loupes, or microscopes during the exam. ;-) I wanted them to hand-write these, so they would be forced to process the material again.

Their username also had to be written on them (I included a line for that on the official version), and they were to turn them in with their exams. I have all of the raw materials now for a potential study on what content students deem important enough for this rather limited real estate, and can also include their performance on the exam and compare it to the class as a whole. I had about 800-1000 students per semester, so my N would be pretty good, and the exam also was pretty solid, both from a classic psychometric standpoint and also from a content POV. I also have this data for a few semesters, so I can compare between semester performance, as well. Now all I need is the time. *sigh*

My informal chats with students (after the exam and course were over), and reviewing the documents and other course data, has revealed the following:

- This alleviated *a lot* of their anxiety over having to prepare for a comprehensive exam, which was the first college comprehensive exam many of them had faced.
- Almost all students believed that this evened the playing field with those students who would have used a cheat sheet anyway, whether it had been officially sanctioned or not.
- The students who attended regularly did not use theirs very much in the exam. The act of writing did do it's job, and they also had the leg up of being better prepared thru solid attendance (paraphrasing their responses).
- Many of them also noted that what they had written down wasn't directly useful for most of the questions that were asked. [BTW, the bulk of information almost all students had entered was factual (Bloom's level 1 & some at level 2).]
- Some were very clever in using different methods of organization with their data, including physical proximity and enclosing lines, color coding with highlighters, and a few even used multiple colored pens, creating a data density that others lacked...

I had made a conscious decision to turn this into another learning exercise for the course, since cheating was likely to occur anyway, given the class size and the testing rooms. By allowing them to use this form of a self-created reference within these restrictions, I didn't believe I was "giving away" too much, and it eliminated all kinds of student angst and problems for myself. For instance, the students who did not do well on the exam, even with this prop, usually had wretched attendance -- hard to blame anyone but themselves at that point.

Just make certain you are creating good exams, allow the use of such cheat sheets (with some thought given to their use, and your desired outcomes), and get on with helping them learn.

I also think Mike's and Jim's posts are spot on, too.

Cheers,

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Greg Hanek ghanek@indiana.edu
.disclaimer .pithy_quote

(response #7)

Knowledge, recall, comprehension are real world needs, too. It might be very important that learners recall broad organizing principles of a subject if they are to select and employ information, tools , job aids, etc.

What about a combined approach to exams, depending on content and level of knowledge required? Basically: closed book for knowledge of x, ...to open book for evaluation of x. The more demanding the cognitive task, the more open the book.

B. Hill
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Seattle University

(response #8)

I have found that so many students believe that "open book" means that they open the book for the first time at the exam that I have resisted such an exam. On the other hand, I find that the 75 minutes we have for an exam leaves many students stupefied or superficial in order to meet the time demands. My compromise is that I give one rather comprehensive question as a take-home essay. Students may use any information from that essay in writing the rest of their exam (40% for the essay and 60% for the part of the exam done in class). The essay needs preparation and counts in the exam, so students must study. More of the exam is better to read. Students feel less pressured about the exam. I feel that there are more opportunities in such an

exam for me to read the best work and thoughts of my students.

I wonder if we are still answering the initial question. Maybe we are.

B.

(Response #9)

Ed Nuhfer wrote: "The "closed book exam" is clearly a relic of the time prior to recognizing levels of thinking...."

Tara Tayyabkhan said "The notion of 'mastery' of a body of knowledge, in the sense of being able to remember it, is perhaps a relic of the pre-Gutenberg era...

Just a reminder of how slow institutions can be to change.".. well, since you ask, (ah the history of assessment. :0) my weakness...)

If you exclude the Chinese Civil Service Exam (2200BC) which was on academic subjects and pretty much blew away any competition for advanced assessment until the early 1900s AD (think about that 4,000 years on top!), then the first academic exam was in 1219, the oral law exam of the essay type (University of Bologna).

U Bologna the first Western university (Go Team Baloney! Just like the ring of that) had been founded in 1088 and was preceded by the oldest university, Al-Azhar, in 988-- so education survived in the West/Middle East for 200-300 years without exams.

It should be noted that any teacher, Socrates included, would have inevitably evaluated students and perhaps did a better job than oral essays, but th1219 is the first formal test for educational purposes that I know of. And predecessors probably lacked a formal scoring system which is a major conceptual shift. (Hey, they didn't publish their system in a recognized peer reviewed journal so they don't get credit). [The Chinese Civil Service Exam was for employment so wouldn't qualify as educational in this sense. However, their efforts to minimize cheating are interesting and oh so familiar, although they built each student a little hut of his/her own.]

Back to the Western world, the earliest notion of a "score" is the idea of a rating scale. It was first mentioned in rough form in the first century and by Galen for body temperature-- (a system still used by researchers seeking "warm bodies" for their experiments and lecturers staring out a group of glazed eyes--[tongue in

cheek]). However, his rating system is seen as a precursor, not a true rating scale.

Back to the notion of the earliest score for educational purposes (i.e., recognized levels of thinking):

In 1441 the Catholic University of Louvain introduced the concept of ranking students and used: honor men; satisfactory; charity passes; failures.

(These are, I assume, translations and you may see variation in the exact terms. Also be aware that words like 'honor' change in meaning over time. The word "idiot," for example, was a technical medical term in 1900 and got corrupted into an insult. It's quite shocking to read some early texts in which they refer to children as idiots.)

We finally get *written exams in 1540 courtesy of the Jesuits, for both educational placement and instruction. So Higher Education got along another 300 years without written exams.

Please note they basically had to wait until paper was readily available and cheap enough for mere students to use. Why was paper available now?

Well, something called the Black Death had left a lot of unused clothes suitable for rags behind. (Later, in the 1800s, the pulp mills used the linen wrappings of Egyptian mummies (of the common folk) and we get an explosion of testing in schools as cheap paper is widely available.)

The Jesuits didn't get around to publishing rules for exams until 1599.

(They're speed demons by educational standards--only 49 years).

The #2 pencil received its designation in 1795 by Conte' to indicate medium hardness (by the way-- there is still no central standard for what the #2 means, the manufacturer just decides...but it's only been 200 years, not nearly enough time in academic years.)

Thomasius, a German philosopher, is one of my favorite folk. He introduced the first psychological rating scale in 1692. But of more interest to me is that he was also one of the first to lecture in the native language of his students (as opposed to Latin). He was soundly criticized for it, too, for corrupting the educational process, mollycoddling students, that sort of thing.

The fun thing is that you can experience just what it was like to be Thomasius by walking into a group of faculty and suggesting they teach on-line or that the university should introduce a first year experience, or confess to using multiple choice exams..... (Thomasius also was one of the first to suggest that using torture to extract confessions was inhumane and illogical. I think he had a clear theme in his life).

Oxford finally introduced written exams in 1809. Let's see that would be roughly 800 years after the first university was founded and about 6-700 years after Oxford was founded (roughly 1096 to 1167 depending on what you consider). My guess is it took awhile because folks were complaining about this newfangled concept and how it would corrupt the educational process (Socrates certainly said the same about writing).

Curiously, one of the earliest known uses of a rating scale in education

(1826) occurred just up the road from me in New Harmony, Indiana, a very odd little town in which a group of utopists settled (actually several settled there but that's another story) including some top names of the time. They used the Scale of Human Faculties to evaluate children in their schools...more at:

<http://www.wku.edu/~sally.kuhlenschmidt/whimsy/tests/shf.htm>

By the 1850s the use of exams had pretty much exploded in the USA for awarding degrees, jobs, etc. The structure of testing of what we know today is pretty much in place. The rapid adoption suggests that exams satisfy some societal needs in a way that other options don't, for all their imperfections. The trick is being thoughtful, not automatic in their use...and history can help us be aware that what we take for granted, hasn't always been so.

To bring the timeline of significant education testing bits to its close

Testing Tech... The Eagle pencil company opened in 1856. The first practical fountain pen was introduced in 1888 replacing the single most successful writing tool in the history of humankind: the quill pen, which reigned supreme for 1,000 years. The ball point comes along in 1938, invented by a Hungarian journalist. In 1880 Herman Hollerith introduced punched cards for collecting the census (which led to Y2k problems because of the restricted column width and to the scantron...which came along only in 1973, a mere 'twinkle in papa's eyes' in terms of time that has passed.

Testing concepts...

The first published multiple choice items showed up in 1915 on the Kansas

Silent Reading Test, still a youth, still misunderstood. 1926 the SAT is introduced. The 1941 norm sample is used as the standard for many years-- it consisted of folk from selective schools. Think about what that says about the college experience (who is "allowed in") in the 1940s vs today. That whole gatekeeping concept of education stems from before the printing press and the very hierarchical society of the time. Educators complained that the printing

press would give education to the masses and lead to the downfall of society as they knew it. (They were right.)
[Does any of this sound familiar w/re technology today?]

By the 1930s the experts considered standardized achievement tests superior to essay tests. (There are plenty of statistical, practical and bias reasons why they make that claim--that's a whole nother POD thread, which sadly I can't participate in because I'm heading off to the conference!).

In 1959 the ACT comes along. In 1965 we finally get the Standards for Ed and Psych Testing from APA. It has been revised a number of times since then. Hey, only 39 years from SAT to standards-- we beat out the Jesuits (w/re posting rules about testing) by 10 whole years. I guess that's progress.

Sadly, (to return to the original question) I don't know when the open vs closed book exam came along other than that the Chinese Civil Service exam was definitely "closed book" roughly 4,000 years ago. Socrates would have been a closed book stroll (or rather closed scroll) from what I understand of his methods...and somehow I can't envision the Jesuits allowing their students access to resources, particularly since it was customary along in that rough time period to chain the book to the library podium. (Although the Jesuit exam was past Gutenberg by about 100 years). I know the atmosphere around those early oral exams was pretty rough-- physical fights might break out. I think they might have been worrying about things other than open vs closed books. (e.g., open vs closed fists).

Haven't updated it in awhile (been busy with POD conferences) but I have these and more fun facts about all types of psychological assessment on a timeline at <http://www.wku.edu/~sally.kuhlenschmidt/mttmln.htm>. I should add that I've gathered these odds and ends from a wide variety of sources and I stand to be corrected/supplemented on any of them.

Sally

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(Response #10)

At 03:36 PM 10/4/2002 -0400, Bruce Wagner wrote:

>PODers,

>I have found that so many students believe that "open book" means that they open the book for the first time at the exam that I have resisted such an exam. On the other hand, I find that the 75 minutes we have for an exam leaves many students stupefied or superficial in order to meet the time demands. My compromise is that I give one rather comprehensive question as a take-home essay. Students may use any information from that essay in writing the rest of their exam (40% for the essay and 60% for the part of the exam done in class). The essay needs preparation and counts in the exam, so students must study. More of the exam is better to read. Students feel less pressured about the exam. I feel that there are more opportunities in such an exam for me to read the best work and thoughts of my students.

I had a somewhat similar experience the first time I used an open notes and book test. It was in an interim course where I had two weeks of 3 hours/day to attempt to get across the basic ideas of organic and biochemistry to nursing students. Since there was no way they could learn all of the terms and rules in that time, I used the open notes and book method. I warned them that they needed to organize their notes and that the test was going to involve more than finding the right words/diagrams and copying them on the test. Unfortunately when test time came, many spent most of their time flipping pages in a desperate search for the right answer.

There have been some comments about not requiring memorization and having comprehensive finals.

As far as memorization goes, before you can do any higher level thinking you must have some knowledge and concepts integrated in your mind. If you just looked up some fact, concept or equation for the first time, there is little that you can do with it. However, I do understand that just memorizing lists of words, etc. is not very effective and the best way to learn facts and concepts is through repeated use in problems, reading, writing and discussion. This requires more time and effort than most students appear to want to invest.

As far as comprehensive finals, there are some cases where a comprehensive final is useful and important. This is particularly true in many science courses, where it is good to have the students review the material and to show that they have learned it rather than just crammed and dumped.

Below is an example of an open-book, open-notes, group final exam that used in a Gen Ed chemistry class. The results ran the whole gamut, some groups turned in minimal responses, while others showed an amazing grasp of the concepts and were able to synthesize very good responses. Students were allowed to take the test individually or in groups. Most worked in groups. The beer truck problem produced some of the best answers. I wonder why?

Each person or group should choose to do one of the following problems.

Grades will be based upon:

- 1) the level of chemical knowledge applied to the problem
- 2) the number of options considered
- 3) and the depth of analysis applied to the problem.

A larger group will be expected to have a more complete and in depth response than a smaller group. Group sizes will be from 2 to 4 students. Individual students may also work on their own.

I will be looking for evidence that the group has considered several possible solutions to solve the problem chosen and then made a reasoned choice among the options to choose the best solution to the problem in the eyes of the group. So list each possible solution that you consider and then list reasons for and against each option and why you chose the one best solution that you did.

In many of these problems you will need to come up with assumptions for values not given in the problem. Any reasonable assumption will be OK as long as you state that this is an assumed value. If you get a value from the text, reference this value with the page number.

1. Calculate the size of a popped popcorn kernel. The popping is done when the water contained in the kernel turns to steam. This is similar to the leavening effect of steam.

2. Calculate the number of trees that would need to be planted to absorb all of the CO₂ emitted by a typical American's automobile. A typical full-grown tree absorbs about 20 pounds of CO₂ and turns it into wood each year.

3. Calculate the amount of CO₂ generated by one person and his or her energy use.

4. Calculate the difference in CO₂ emissions if gasoline auto is converted to electric, with recharging by electricity from both a coal fired power plant and from a natural gas fired power plant.
5. On the basis of energy availability, cost, chemical, environmental, sociological and technological factors, determine what would be the best method to fuel an automobile today, and compare that with the best way to fuel an automobile in 2040.
6. You have been chosen as a committee to reexamine the use of food additives. What food additives should continue to be used, which should be banned, and what possible new food additives should be used?
7. You have been chosen as a committee to reexamine the use of pest control methods in agriculture. Decide upon a plan to make the control of insect pests in agriculture safer to the environment and to consumers without greatly increasing the cost of food. Decide upon a reasonable length of time for the new plan to be initiated.
8. After a breakdown in society in the year 2030, the U.P. has been left as an isolated island of civilization. This pocket of civilization is now being threatened because energy sources from the outside world including coal, oil, natural gas and electricity are no longer available. What method or methods would you use to provide the needed energy for homes, factories and transportation. All of these sources must be available in the U.P. Also, estimate the percent of the total each method would provide. (Note: The hydroelectric generating plant in town only provides a small percentage of the electric power for the town, so it cannot take over more than about 10% of the total.)
9. Your company wants to develop a natural fertilizer which will provide the nitrogen, phosphorous and potassium. This fertilizer should be a 10-15-10 fertilizer mixture. Determine which natural sources of each nutrient and how much of each will be needed. You will need to try to make your fertilizer as inexpensive as possible and also easy to store and use.
10. One of the biggest problems with the environment is the general ignorance of most of the population. This is particularly common in cases where the pollution is not visible. Develop an education program to inform people about the problem of the greenhouse effect and what they can do to help minimize this problem.
11. The spoilage of food, through decomposition, bacterial and fungal attack, and by insect and rodent attack results in the loss of over 20% of the world's food supply each

year. Look at the methods of food preservation in the text and from your own knowledge, and come up with a list of the most cost-effective ways of preserving food. (Shipping deep-freezes to third-world countries won't work, since you can't plug them into the ground.) Also take into account the technology and the fact that some methods of food preservation will change the food to make it unpopular with the people it is intended for.

12. There has been a movement to ban the production of elemental chlorine and organic compounds containing chlorine. What problems might this cause? What problems might it solve? What alternatives are there other than a total ban and how might you go about deciding which compounds are "good" and which are "bad"?

Mike Chejlava
Lafayette College

(Response #11)

I agree. I've used open book exams in the past but don't think there is much gain. In the time allotted, students spend too much time looking stuff up that they really should have digested before the test. It is not just a matter of "binge and purge learning" but have mastering materials that they can then use as requested, building on these materials as the situation demands.

Some of the scholarship on the importance of memory is pretty persuasive. Here is one piece that I like a lot:

Conway, M.A., Gardiner, J.M., Perfect, T.J., Anderson, S.J., & Cohen, G.M. (1997). Changes in memory awareness during learning: The acquisition of knowledge by psychology undergraduates. *Journal of Experimental Psychology: General*, 126, 393-413

The basic theme of this fairly rigorous study is that the more students know the more powerful their subsequent learning is. "Remembering to learn," i.e. remembering material that enables one to learn more, is the guiding term in this work. That doesn't mean other kinds of learning are irrelevant, of course.

Best,

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(Response #12)

I have been reading the open book exam thread with interest because this past week I abandoned using "tests" in my courses because I finally could no longer deny the disconnect between what I CLAIMED I was using the tests for and what was really happening.

The first to go, years ago, was the comprehensive exam. Instead it was replaced with a capstone sort of assignment that demonstrates to me that they have met the required competencies derived from the course. For example, in my "Inclusive Classrooms" course, my students must create a teaching unit that demonstrates to me that they can take lesson plans that they have created and make adaptations to meet the various learning needs of their students. Does it matter to me whether they have IDEA memorized? No. It matters to me that they are able to look at an IEP and implement it. This they demonstrate through the capstone project.

Up until this past week, I gave weekly 10-item multiple choice exams. Being an educational psychologist, I was careful to create exams that tapped into higher levels of thinking rather than just rote memorization-regurgitation-never think of it again levels. I professed that I gave weekly quizzes in order to "encourage" students to keep up with the readings and to have them demonstrate that they can apply the knowledge. This is what one of my university mentors had done and I had adopted the practice. My students HATED the quizzes. And, I would provide ways to earn extra credit to make up for a poor quiz grade and/or drop the two lowest grades. This semester, the trend in the quiz scores was downward. Was I teaching differently? Not substantially. Lower "quality" students? The overall GPA of my students this year is higher than prior years although my students are younger. As I was prepping to meet with 2 biology professors that I'm "coaching" on their assessment techniques, I decided I had to give up the charade--I had to let go of my quizzing security blanket and admit that it was not the best tool for what I was hoping to accomplish. My students are now required to turn in a short paper identifying what they learned from the topic (5 things they learned), why it is important as a teacher to know this concept/strategy/information and to provide an example. The

stress level in the class has been reduced dramatically already and my students are considering nominating me as some sort of goddess. As for me, I no longer have to create these quizzes and wonder what the fallout is going to be. I no longer have to have a case of the guilts as I teach the graduate level Tests & Measurements course because I knew what I was doing wasn't really valid. This new method will achieve the goal: students will keep up with the reading and will be able to demonstrate to me that they have learned in a voice that is authentic to them.

Sometimes an old dog can let go of control and learn a new trick... *smile*

Julie
Julie-Ann M. McFann, Ph.D.
Educational Psychology
Purdue University, North Central

(Response #13)

I replied to Bill Hill's good comments and explained myself a bit more. I should have sent this reply below on to the entire list.

I don't mean to imply that learning a certain amount of content that must be memorized is not important. For instance, one must know the discourse of a discipline to access the information system of the discipline. In other cases, memorization is more efficient than any other option. For instance in geology, it is more efficient to memorize how to identify the common rocks and minerals because it is too expensive to tie up lab equipment to deduce the compositions and classification of substances that a bit of training and an eyeball can deduce. Further, hauling analytical equipment into the field is not a practical alternative to memorizing the characteristics needed to identify common earth materials. The problem I see is that the need to separate basic information that must be memorized from reference information that need not be to any great benefit is never critically questioned. Therefore, an unwarranted emphasis on memorization usually becomes standard practice in all levels of courses. This should not happen in a well planned curriculum.

(Response #14)

From: Ed Nuhfer <nuhfed@isu.edu>

> Knowledge, recall, comprehension are real world needs,
> too. It might be very important that learners recall
> broad organizing principles of a subject if they are
> to select and employ information, tools , job aids, etc.

Bill, I agree. That' is why I premised my reply on "some courses." The problem here is that senior and junior courses usually end up being just harder low-level chores and not really higher levels of thinking.

> What about a combined approach to exams, depending on
> content and level of knowledge required? Basically:
> closed book for knowledge of x, ...to open book for
> evaluation of x. The more demanding the cognitive
> task, the more open the book.

I agree to your view expressed here too. I'd add that a planned curriculum that places the acquisition of basic information as the major outcome in the earlier courses but gradually supplants this outcome with one that stresses higher level thinking and ability to use, synthesize and to self-reflect at high levels by the senior year courses could do a better job than the current ones that result from cheese-whiz kinds of planning that are rarely more than an order of courses designed to cover a sequence of topics.

Best wishes!
Ed

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(Response #15)

Re: Assessement, tests, etc.

What I find interesting in our discussion thread (and I may have missed it) is that I'm not sure we've considered the possibility that students may do better memorizing material once they've had an opportunity to apply it. Perhaps it isn't so much "Should they memorize core facts?", but rather, "How can I the teacher best get this material to stick?" I tend to the assignment rather than testing approach. As an example, if my 7-yr old has written a story in which she has to use a list of ten words at least 4 times each, she will have memorized their spelling by looking at the provided list each time, and she will have functioned at a higher cognitive level than if she simply copied out the list. My personal favourite for getting post-secondary (particularly graduate) students to learn key subject terms is to give them a paper to critique, and to critique it from their own perspective, e.g., are key terms and concepts clearly defined. 'Epistemology' takes on a whole new meaning when they have to look it up!

(Response #16)

After the excellent commentaries by Mike Theall, Ed Nuhfer, Tompson, and Chejvala on the topic of open book exams, I find very little to add. But I will anyhow.

In my more recent peregrinations I have been insisting to audiences that learning has two major components: understanding, and remembering. I came to this conclusion gradually, and mostly from reading E. D. Hirsch. He uses the wonderful expression "intellectual capital" to remind us that we cannot even uncork a meaningful sentence unless there is information upstairs, accessible on demand. In an article for "American Educator" he argued convincingly that you can't really make any sense of something you "look up" unless you know something about it before you start. I think we can support open-book exams and problem-solving exams from notes etc., without demeaning the importance of memory.

Bob Leamson

(Response #17)

As usual, Bob Leamnson makes sense to me, even though I gave up on Hirsch after Cultural Literacy and its commercial progeny. But I wonder . . . we cannot even uncork a meaningful sentence unless there is information upstairs, accessible on demand. In an article for "American Educator" he argued convincingly that you can't really make any sense of something you "look up" unless you know something about it before you start.

Yes. But I wonder whether he'd agree (and whether Bob would agree) that it's in a context like that that the stuff upstairs is actually accessible, and most usefully accessible, and that the ability to recall it randomly and outside a context of use (as on an examination) is quite different, and a whole lot less useful? Further, I wonder whether they'd agree that the best way to keep that stuff in the attic available is to use it regularly? If so, I think there'd be stronger reason to go on to say that I think we can support open-book exams and problem-solving exams from notes etc., without demeaning the importance of memory.

I don't think anybody was, though they may have been wondering about the usefulness of memorizations.

-- Russ