COMPENDIUM OF GOOD IDEAS
ON TEACHING AND LEARNING
Dear Colleague:

Little did we know how important this publication would become to teaching and learning at the University of Colorado. It makes many statements: one is that good teaching happens on our campus daily; another is that our faculty are most happy to extend themselves in a conversation about teaching and learning by giving us their good ideas for teaching practice; and another is that our faculty wish to continue to learn more about effective teaching.

We have honored many faculty who are good teachers in our booklet: over 50. We have compiled over 180 teaching tips. And we will plan to continue to do both in future editions.

The teaching and learning ideas have been placed into the following six categories:

1. Organization and Clarity
2. Rapport with Students
3. Communication Skills
4. Promoting Discussions
5. Fair Exams and Grading

The categories are of course not discrete; we have, therefore, cross-referenced those ideas which seem to fall into two categories.

Many people have been a part of the Compendium project: Rich Kroc, now at the University of Arizona, Amelia Kreitzer, presently at Boston College, and Bridget Klauber of the University of Colorado Law School and, of course, our faculty. I wish to thank them all.

The Compendium is for sale at the University of Colorado - Boulder Book Center for $6.95. We trust that you will find it a valuable teaching resource.

Sincerely,

Mary Ann Shea
Director

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ORGANIZATION AND CLARITY

Organizing For Yourself

1) If a subject is particularly difficult to understand on an abstract level, begin with concrete examples. If, however, the number of concrete details is overwhelming, begin your explanation on an abstract, conceptual level.

2) Consider the length and complexity of your lecture topics when scheduling your course.
   - Some faculty feel that 75 minute hour classes allow them to deal with their topics more thoroughly.

3) Write down the questions asked by students in your lectures. Incorporate the answers to these questions into your lecture notes for the next time you teach the course.

4) Never rely exclusively on last year’s notes to present this year’s lecture.
   - All professors interviewed constantly update and revise their lectures. One rereads the same source material every year and finds fresh insights each time. Another strives to clarify what he knows is a particularly difficult topic. All professors interviewed search for new and better examples to include in lectures. The revision takes time, but it renews their enthusiasm for the lecture.

5) Borrow from your experience as a student and as a listener in planning lecture presentations.
   - One professor remembers how frustrating it was when his professor didn’t make it clear why they were going from one step to another. He notes that the few ideas which he has never forgotten “were presented in such a clear way that they almost seemed like common sense.” He uses this goal in preparing his own lecture explanations.

6) Develop a strategy which helps you organize your thinking on a specific lecture topic.
   - One faculty member writes out his lectures verbatim, not with the intent of reading them, but with the goal of organizing his thoughts. Another professor takes his lecture notes out a week before he’s scheduled to cover a given topic and then runs through them once a day. Another instructor, who uses the chalkboard extensively, visualizes how the information he plans to cover will best fit on the boards; this process is his organizing tool.

7) Lecture on unfamiliar topics to expand your own knowledge.

8) The more secure you are with the course content, the less likely the student is to be intimidated.
9) Write an essay about the purpose of the course and include it in the syllabus.
   • One professor spends a whole class period on the topic of "what we are here for" and makes an effort to refer back to the essay periodically during the semester. He feels it's important to remind students always of the larger picture.

10) Prepare lecture notes and hand them out a few lecture periods ahead of time so that students can see where you are going.
   • One professor notes that this practice introduces the students to the factual content and allows him to move beyond the facts to "how they can be applied to current problems."

11) Lecture from only a few notes and specific examples.
   • One professor remarked that this method "gets me to think about the concept each time. If I prepare too much I'm usually too detailed for the students in my lower division classes. I decide on two or three issues that I want to emphasize with pertinent examples."

12) List the sequence of what you hope to accomplish in class--"goals for the day." including a list of particular students that you want to make sure to include in discussion that day.

13) Have the first assignment include material that should have been learned in prerequisite courses. This will enable you to establish whether or not the students are working from the same base of knowledge that you are assuming that they are.

14) Immediately after giving a lecture, write comments on the lecture notes about what didn't work, what didn't seem clear to the students, if you had enough time to cover all of the material, or if you need to include more material. Use the notes as guides for revision the next time you use the lecture.

15) Keep folders of pertinent journal and magazine articles and file them according to the course for which they are pertinent.

16) Take into consideration the rate at which students assimilate and learn material when planning a syllabus.
   • One professor found that it is easy to over-plan a syllabus. He found that all too often important material at the end of the semester is neglected or given a proportionately short amount of time.

17) Conduct a seminar for your T.A.s that runs concurrently with the large lecture undergraduate course. The seminar covers the course material and provides an opportunity to talk about the different teaching approaches to the material.
18) Use a word processor to record comments about student papers.
   - One instructor calls up the same headings for each subsection of her comments, e.g., "content," "style," and "organization." She then types in her specific remarks. These comments can be stored, so that she can better assess student progress when additional papers are turned in.

Organizing For Your Students

19) Be sure that things written on the board or overhead projector are complete from a student's point of view.
   - One lecturer says he makes a major effort to write down everything clearly with nothing omitted. If it's important enough to write on the board, it's important that it be clear and understandable.

20) Share with your students what you know about the active learning process and the same tricks and hints that you use in order to remember things.
   - One instructor says, "I make a conscious effort to give students hints about how they can remember things... little observations about equations, to help them see the logic of it."

21) Make only a few major points per lecture.
   - One professor makes an effort to show students that the details can be understood in a relatively simple framework. He tries to demonstrate that "by remembering a small number of things and rearranging them, you can always find the minute details."
   - Another professor limits himself to a few major points each lecture and begins the class by telling the students, "the three main points of this lecture are..." and he concludes by summarizing those main points.

22) When covering difficult topics, use one whole lecture to discuss the main points from beginning to end. In the ensuing lecture(s), fill in the details.

23) Summarize your major points at the end of each lecture.

24) Explain each concept from a variety of perspectives.
   - One professor systematically explains each concept verbally, mathematically, graphically, and by example. He recognizes that, for example, his more analytical students most readily understand the mathematical explanations, while other students seem to need a verbal explanation in order to understand. He is sure then that every student in the class will be able to understand the concepts in a way that coincides with the student's individual learning style. His tests are also based on this variety of perspectives; he includes questions of each type.
25) For each topic you cover, use examples that are current and that are relevant to students’ interests and everyday life.

- One professor searches all year long for examples from both the popular press and professional journals. When he finds something that relates to everyday life, he clips it and files it. When preparing for lectures, he tries to incorporate the new examples into the presentation. Some examples of good examples are:
  
a) The refractory period of a nerve can best be compared to the time period immediately after flushing a toilet, when it can't be refushed.

b) Economics concepts can be illustrated by examples from the popular press or from a typical student’s expenditure record.

c) In Astronomy, looking at a star’s brightness can be compared to looking at an automobile’s headlights.

26) Prepare a handout with the general lecture outlined on it, especially for difficult concepts.

- One professor hands out an outline with about 3-4 main concepts on it. The students can then fill in the details directly on the handout. (He does this with particularly thorny topics).

27) Write the outline of each lecture on the chalkboard or overhead transparency before class.

- One professor writes the outline on the board when the lectures are packed with information. "The outline is a way for the students to organize their notes. I don't want them to copy down everything I say. I want them to listen. I want them to get the major points.

- Another professor lists on the blackboard the IDs--people, places and things that the students must know in order to make sense of the material.

28) Write each new concept on the overhead projector or chalkboard as you introduce it.

29) Use railroad chalk, i.e. large size, when writing on the chalkboard. (Available at the UMC bookstore.)

30) Prepare overheads in advance, especially if your hand writing isn't clear or if your spelling is poor.

31) Work out practice examples of difficult problems on the chalkboard. You can also elicit student input in the problem-solving process.

32) Do demonstrations to illustrate principles, but keep them simple and leave time to explain them.
Try team teaching in order to show students that there is more than one view of the subject.

- One professor notes that when students get two quite contrasting views on successive days, they have to make their own decisions. "To me," he says, "that's a whole lot like real life where there isn't any right answer."

Start a class with a short question and answer session in order to clarify, review and lay the groundwork for new material.

Help students with a text that is full of new terms by giving them a summary sheet on the reading that includes the terms that you consider important and questions about the material that the students should consider.

If you consider an overhead or slide important, give the students a handout of it.

If you consider certain material important, tell the students "this is important."

- One professor suggests that students go to their text and count the number of pages devoted to a particular topic. He tells them that a ten page topic is usually more important than a two page topic and that the same rule applies to lectures.

Take the students to the library and have the librarian show them the basic reference tools for your particular discipline.

- One professor has the students practice their library skills after their visit. They are required to choose a topic, find relevant material and construct a bibliography. He has found that "many students are completely intimidated by the library and they appreciate your holding their hand through it for the first time."

During the first lecture, explain the main goals for the course and how they fit in with the discipline and the entire curriculum. Ask the students to articulate how they see the course as important.

Model the conceptual thinking process that you expect the students to do.

- One professor spends the first few lectures presenting the theory for the course. "Every subsequent lecture is not self-contained, but fits into the general framework. During the course of the semester I will always return to the framework, often questioning rhetorically about how things fit together."

- Another professor expects the students to have a "critical engagement with the text." She models the reading process in class by going through a paragraph, showing the students what to do with the text.

Require students to present their ideas in writing.

- One faculty member assigns weekly "reaction papers," an opportunity for students write a reaction to the works that they are reading. She has found that
the students "acquire confidence in their own voice by being encouraged to write their reactions to what they are reading. I use the reaction papers as a prelude to an analytical paper."

- Another professor requires students to write a scholarly paper and then use the most interesting part of the paper for an informal class presentation.

42) Use a variety of materials.

- Many faculty mentioned the importance of different materials in generating student interest and exploring a topic.

Helping Students Synthesize and Explore

43) Set high standards for the students, but provide them with the tools and guidance to reach those standards.

- Two professors, who have a reputation of being "hard," noted that they expect their students to read and know a great deal of information. At the same time, they are careful to provide students with a structure or conceptual outline which can help students organize that information, and tricks or hints for remembering the information.

44) When presenting a new topic, link it to the material you've already covered, and suggest how it will lead to what you'll cover in the future.

- One professor points out these connections for each topic covered, and reminds his students that making connections in this manner is what she'll test them on.

45) At the start of a lecture, summarize the previous lecture.

- One professor says it only takes him about three to five minutes to do this, and that the time is well spent. He finds there are fewer puzzled looks, and fewer students interrupting the lecture with questions. Another professor writes three or four main concepts from the previous lecture on the board before he begins. Sometimes he discusses them briefly, or invites questions about them. Often he just leaves the concepts there on view.

46) Two to four times a semester, give students the assignment of summarizing the most important concepts in the course up to that point.

- Several weeks before the midterm, one professor asks his students to write a list of the most important general equations from the first half of the course, to identify all the terms in the equations, and to provide a physical example of each term. He notes that reading their answers gives him a good idea of what concepts aren't clear to the students. The next class session, he gives the class his list of the most important equations, and explains his choices. He finds that the process helps students "chunk" facts into larger conceptual units.
47) Use the same basic outline for presenting each new concept or topic.

- Students can grasp the organizing principles of the course more easily if the material is presented in a systematic format. For every system studied in physiology, for example, one professor first describes the organs involved, then how they function, then how they're regulated, etc. In economics, one professor explains each concept first verbally, then mathematically, then graphically, and finally by example.

48) During class, ask synthesis-level questions of students.

- Asking students synthesis-level questions discourages memorization. In physiology, for example, asking students "How does a malfunction in this system affect the systems we've already studied?" forces them to integrate new information with what they've already learned.

49) At the end of the semester, sum up the entire course.

- In physiology, for example, one professor shows a film of human autopsy.

50) As students are entering, spend five minutes before class discussing a recent article in the field.

51) Tell students about current journals and books related to the course.

- At the beginning of the semester, one professor hands out subscription sheets to a variety of pertinent publications and suggests that the students subscribe to at least one.

52) Present the different points of view for a particular issue.

- Systematically critique each point of view to indicate alternative perspectives.
- Invite a colleague to class who has a different opinion on an issue and argue the issue in front of the class.

53) If a question comes up in class that you don't have the latest information on, ask a student to look up the information and report back to the class. Give suggestions to the student about where he could find the answer.

54) Give students the opportunity to use the information that they are learning.

- One professor structures the course with the first half covering basic information and with the second half of the semester spent on students' projects, where they apply their knowledge and demonstrate their understanding.

55) Use a variety of texts for a course.
One faculty member mentioned that if another text besides the required one does a better job with a particular point, he xeroxes the information as a handout or puts the book on reserve.

Another professor gives students a number of textbooks from which to choose. The students must choose two of the texts to use as references. He has found that "it gives the students slightly different perspectives and phraseology on the same subject matter and I teach the subject, not the textbook."

56) Send students on a self-directed field trip.

One professor remarked that "most field trips are lectures on a bus. The self-directed field trip gives students the opportunity to discover information about their community and points out the fact that learning can and should take place outside of the classroom."
RAPPORT WITH STUDENTS

57) Invite students to eat lunch with you once or twice a week at a prearranged time and place. Encourage teaching assistants to also attend.

58) Visit all the recitation sections or labs at least once during the semester.

59) Occasionally discuss teaching as an issue.

60) Solicit student reactions to, or criticisms of, the course structure.
   - One professor develops her own very specific course questionnaire so that she can have detailed feedback about all aspects of her teaching.

61) Reserve the last five or ten minutes of each lecture for students' questions.

62) Do demonstrations in which classroom volunteers can participate.

63) Come to the classroom a few minutes before the lecture and stay a few minutes later so that students can ask you questions.
   - One professor goes to his large lecture classroom early "to chat with a few individuals about basketball, their weekend etc. It allows me to make contact with a few individuals and as the other students come into the classroom, they see that I am human and interested in them."

64) Require some or all students to come to office hours.
   - One professor requires visits of all students getting either A's or D's. She writes a list of students' names on the board after the first two assignments and announces, "These are the people who have either done very well, or who haven't done as well as you or I would have liked, so I'd like to meet with you..." She finds that students are generally grateful for the personal attention.
   - Another professor asks via a written note on homework or exams that certain students come in during office hours or at an appointed time. When the students do come in, he learns their name and a bit of personal information about them.

65) Urge the students repeatedly, over the course of the semester, to come to your office hours.
   - One faculty member writes his office hours on the board every several weeks and makes a pitch to students to come in. He finds it easier to remember to do this if he writes it in his lecture.
   - Include office hours on homeworks and handouts as a reminder of when you are available.
66) Watch students in the front of the hall for cues as to how the lecture is going.
   - All the professors interviewed noted that experience has taught them to read
     student faces. "When I can tell that they're not following me, I explain the point
     again and ask for questions."

67) Never give any hint that a student's question is too elementary.
   - Two faculty members remarked that in their experience, comments which
     suggest a student's question is elementary discourage other students from asking
     questions.

68) Leave the first few minutes of class for questions about the previous lecture.

69) State your expectations, objectives, and requirements clearly on the syllabus.
   - All of the professors interviewed feel it is extremely important to let students
     know exactly what is expected of them.

70) Warn the class in advance that a certain topic will be difficult and they should be
    certain to ask questions.
   - One instructor says he feels students are less reluctant to ask questions when the
     topic is "officially" designated as "tough." He also makes a point of explaining
     difficult concepts twice.

71) If students look drowsy, open the windows and let them stretch.
   - One professor says, "If it's a really awful day, and they're all looking bored and
     sleepy, and the windows are shut, I will generally open the windows and suggest
     that everybody stand up. I tell them, 'It seems kind of a waste of time for me to be
     lecturing when you all look so sleepy, so let's do something about it.'"

72) Teach a recitation section.
   - From the questions students asked in recitation, one professor says that he has
     a much better idea of what concepts aren't presented clearly in lecture. Because
     he teaches recitation, he recognizes more faces and knows more names in the
     lecture classroom. An additional benefit is that the recitation students are less
     reluctant to ask questions in the lecture, and this in turn encourages other
     students to speak up when they have questions.

73) Encourage students to call you at home on a second line.
   - One faculty member writes her phone number and suggested hours to call (not
     after 10 p.m.) on the syllabus. She feels it's more efficient for her and her
     students: they don't have to make a trip to the office, and she doesn't have to set
     up so many appointments. She also has an answering machine on that line, so
     that she doesn't have to take the calls when they come in. (And it's tax
     deductible!)
Learn as many student names as you can.

- All the professors interviewed make an effort to learn student names. A professor of a year-long course has each student photographed in his/her recitation section. Another says that any time students ask questions in class or come to office hours, he asks the student to identify themselves. Another professor makes a seating chart for the 70 students in class, so that she can call on them by name. Even if you can only remember 25 names, addressing some students by name creates a more personal atmosphere in the lecture hall.

- Have the students make name cards for their desks and use them for the first half of the semester.

- Ask the students to state their name before they answer a question.

Give students the opportunity to get to know one another.

- Several faculty members ask students to introduce themselves to the class. Another professor plans a field trip in the first month of class so that the students can develop an "esprit de corps." Others type up lists of student’s names, phone numbers, and preferred hours for study groups.

Invite a specialist from the Academic Skills Center to talk with your students about the study skills that are important to success in your class.

- Academic Skills Center Personnel can talk with your students about note-taking, test-taking, memory habits, and efficient reading.

At the beginning of the semester set office hours by discussing with the students the times that work best for them.

Hold office hours outside of your office.

- One professor explains that "Every week I hold some office hours in the UMC--on students' territory, a place where they feel comfortable. I tell them that I'll be there and they can come to talk about biology or anything. Many of them do respond to the invitation."

Acknowledge students' contributions.

- One professor suggests that "if someone has made a point and you pick up on it or come back to it, refer to the student by name and give them credit for the contribution."

Use humor.

- One professor uses humor to create a relaxed atmosphere. "If students feel relaxed and confident, they will perform better."
Another faculty member finds that "humor is an underrated vehicle. I find it important to laugh at myself so that students may learn to separate their work in a class from their personal identity."

81) Offer more than the required number of office hours.

82) Use electronic mail to communicate with those students who have a computer.

83) Collect homework assignments and in-class quizzes.

84) If a few students come to office hours with a particular problem, present that problem to the whole class. Students who do come to office hours often pose the problems that many of the students are having.

85) To solicit student feedback give out a mid-term course evaluation which will give you a chance to make adjustments for the rest of the semester.

86) In addition to the FCQ, give your own end of course evaluation and share the comments with the class.
COMMUNICATION SKILLS

87) Tell students you don't know the answer when in fact you don't.

88) Because teaching is a performing art, discover a personal strategy or approach you can employ to get "psyched up" and enthusiastic for a lecture.

89) Experiment with varying your voice tone, volume, and speaking rate. Notice how different techniques affects student attention and interest.

90) Plan to include humor and "extemporaneous" inserts in your lectures.
   - One faculty member noted that the stories or jokes must be related to the content of the lecture in order to work. Another warned that he has had to temper his sarcastic humor, because it seemed to alienate the students.

91) Tape your lecture once or twice, and listen to yourself.
   - One professor was quite surprised to hear that he lectured as slowly as he did. If you're concerned about your lecture speed, you could count the number of words you say in a minute; the ideal is 170 wpm. You could also check your presentation to determine if you emphasize strongly enough the points you consider crucial. Think about using pauses, intonation, or introductory phrases to punctuate main concepts.

92) Talk directly to different individuals in the class rather than just glancing around the room.
   - Maintaining sustained eye contact with different individuals can give the students the feeling that you are accessible, even in a large lecture hall with over one hundred students.

93) Whenever a student asks a question or makes a comment, repeat or paraphrase it to be sure the other students can hear it.

94) Use an overhead projector rather than the chalkboard so that you face the students.

95) If a student asks an unclear question, try to paraphrase it in order to be sure you understand what s/he's asking.
   - One professor noted that guessing the meaning of a student's question and attempting a hurried answer is never a satisfactory strategy. He finds that after a brief dialogue with the student, he can get to the heart of the question.

96) Move around the room as you lecture, both back and forth and up and down the aisles.
   - One professor recommends extra-long microphone cords or cordless microphones (available from Academic Media Services) for use in large lecture
halls. Another professor suggests moving the front seats back so that you have more room to move around. Another even goes so far as to walk up the steps in the large lecture halls, so that he can direct his speech to particularly drowsy groups in the back. As one professor noted, "I'm certainly aware that if I stand still, they stop paying attention."

97) Check the acoustics in a room before the semester begins.

- One instructor takes her TA with her to inspect the room. They talk to each other from different points, so they can determine where the "dead spots" are. She makes a point of avoiding those spots while lecturing and repeating student questions that come from those parts of the room.

98) Use role-playing to introduce different theories.

- One professor's explicit goal is for students to become familiar with different theoretical viewpoints. Rather than give a critical analysis of a given theory in which he is always the intermediary talking about something, he plays the role of the follower of that theory. In this way, he feels he leaves that position as well-represented as possible. He begins like this: "I'm going to introduce a guest speaker, and you'll have to suspend disbelief for a moment..." You might also consider acting out the part of an important historical figure.

99) During the first few weeks of class, identify students who stand out in their predictable responsiveness to your material. Use their reactions to guide your presentation.

- One professor says, "If these people look calm, then I know the average person has gotten it. If they panic, then I realize I need to find another example."

100) Watch yourself teach on videotape.

- One professor noticed that he had a very strong bias toward the left side of the classroom. As a result, he then made an effort to place his notes and transparencies on the right so that he had to turn to the right.

101) To deal with the "ragged beginning" of late arrivals, begin the class with discussion of a related issue or controversy in the field.

- One professor begins an introductory level physical geography class with a five minute discussion of the nation's weather. He explains that "the issue is interesting to students from different parts of the country, but it is not crucial to everyone's basic understanding of the course material." The professor isn't overly distracted by late arrivals and the late students haven't missed the review or sequence of new material. A political science professor begins each class with discussion of a news item.

102) In order to help students whose skills are weak in writing and critical thinking, during an office appointment read their essays out loud to them asking them questions as you go along.
103) Use slides, overheads, pictures and films to show students what you are talking about.

- One professor remarked that he was a visually oriented person so it was important for him to share with his students the slides and pictures that he had collected. He felt that the visual material gave students "a feel for the real essence of the subject matter."

- Another faculty member does simulations on a computer and projects the computer onto an overhead.

104) Use videotapes to supplement your lectures.

- One professor regularly videotapes certain television shows which he knows are relevant to his course content. Another faculty member remarks that "seeing a ward of schizophrenics is worth 20 books on the subject."

- Another professor suggests videotaping demonstrations and showing the tape instead of repeating the live demonstration every semester. "It saves time not having to set up the demonstration each time and eliminates the worry about the demonstration not working or coming out wrong."

- Videotape lectures or seminars by visiting professors or speakers and use them in appropriate classes.

- One language professor uses videotapes instead of the traditional audio-tapes.

105) Draw graphs on the board before class starts and handout illustrations that are better than the ones that you can reproduce on the board.

106) Use concrete, "real-life" examples or personal anecdotes to elaborate on points.

- One professor remarks that "the students will often remember a story and it helps me to get across the fact that I am not just concerned with their understanding of theory and meta-theory, but how all of this affects real people."

107) Break up long classes with different activities.

- In a one hour and fifteen minute class, one faculty member lectures for part of the class, has a short break and uses the last 15 or 20 minutes for student questions. During the break he encourages students to come forward with the questions and problems that are giving them trouble.

108) Ask students key questions about the lecture during or near the end of the lecture to be sure that the key points are getting across. Call on students randomly; do not rely solely on the feedback from those who eagerly volunteer.

109) Use the blackboard to diagram a process of complex ideas, showing the connections that you are making. At the end of class students can point out where they missed the connection or were confused.
110) Ask inattentive students a question, but answer it yourself.

- When one professor notices that particular students are drowsy, talking, or distracted, he addresses them by name in a non-threatening tone of voice, asks them a question, and then answers it himself. He notes that it gets their attention, it brings them back to the class, and yet it spares them the humiliation of being put on the spot. For example, without breaking the flow of the lecture, he'll say, "So Nancy, how do you think this graph might change if we..." and then he'll immediately answer, "Well clearly it will..."
PROMOTING DISCUSSION

111) Tell shy students that an easy, painless way to speak up in class is to ask questions rather than risking making a comment.

- In conferences with some of her shy students, one professor makes them promise to try to ask just one question in the next class discussion. She notes that if they participate just once, even in this limited way, they find it much easier to take part in discussions for the rest of the semester.

112) Rather than evaluate a student's response, throw the question back to the class.

- To keep a discussion in the hands of the students, avoid the temptation to comment on or evaluate a student's response or question. Instead, try a question that forces the students to evaluate and comment, such as: "Mary what do you think of Sue's answer in relation to..."

113) Be willing to interrupt yourself, even mid-sentence, if a student raises a hand.

- One professor notes that "this reinforces the idea that what comes from the student is of more use to the class than anything I can say."

114) In order to encourage more thoughtful comments, give students the chance to think and write about a topic before having to discuss it in class.

- One professor gives his students worksheets every class period, which will serve as the basis for the discussion in the following class. In this way, the students have something written in front of them that they can refer to; thus, "it's not the glibbest or most articulate students who participate, but also the more cautious thinkers, who often have more interesting things to say." He notes that the worksheets are most effective if they're fairly structured, and if they force students to engage with the text.

115) After asking a question of the class, wait a good long while for them to answer.

- One instructor notes that nothing works better in encouraging student response. "It's not so much being silent, but making the class feel responsible for the silence. They know I'm not going to come in and save them." He also notes that the silence is never really as long as the instructor thinks it is, "so, wait longer than you think is reasonable."

116) At the end of class, write down the questions that you asked that worked, and the questions that did not get responses. Try then to discover what types of questions best elicit student responses, and what types of questions you need to rephrase.

117) To encourage students to contribute to discussions, remind them periodically that they have "a freshness of vision" that you no longer have.

- One faculty member remarked that it pleases students to know "that they have any kind of advantage over a professor."
118) To encourage discussion, ask questions in class for which you have no particular answer in mind.

- One professor said, "When I ask a question in class, I don't usually have a particular answer that I want the students to convey to me. I'm not looking for my view to be corroborated." She notes that nothing "kills" a discussion faster than conveying to the students that you're looking for the right answer.

119) In your comments on student's papers, encourage them to contribute more to discussions.

- One faculty member says that if she notices some students are hesitant to speak up in class, she makes a point to write encouraging comments on their papers, and to urge them to share their thoughts more often in class.

120) When a student makes a comment, acknowledge its worth, but then push the student(s) farther.

- One professor always asks students to refine their first comment: "That's good, but where do you see that in the text?" or "Okay, can you clarify that?"

121) If someone makes a comment which is off the topic or off the wall, ask the student questions such as, "How does that connect with what Joe just said?"; "Are you agreeing, are you contradicting, or are you amplifying?" or simply say "Hold that, that's a good observation, but let's wait with that."

122) Reorganize the classroom into a horseshoe or circular arrangement so that the students can see each other.

123) In a large lecture class, every few weeks have an entire class period that is devoted to discussion. Tell the students ahead of time so that they can prepare questions and comments.

124) Have an in-class debate.

- One professor holds debates in classes of up to 100 students. He tells the students at the end of time the issue and they are assigned to prepare an argument. In class the students break into groups and the group prepares an argument that will be presented to the class. The professor found that "it is a way to get every one involved in a discussion and have students work with concepts and each other's ideas."

125) Have students keep a journal where they reflect on assigned questions or pertinent issues as a way of preparing for class.

126) Break students into in-class workshop groups, situations where students can share their research and learn from one another. Small groups provide an opportunity for more students to actively participate and are less threatening situations for the shyer students.
127) When you call on a student who is obviously unprepared, in the interest of promoting a discussion help that student along with a few clues.

- One professor feels that it is crucial that you help students along without embarrassing them or making them feel stupid.

128) Cultivate shy, reticent students throughout the semester. Have them start off slowly, give them positive feedback and then expect them to contribute more and more as the semester progresses.

129) Have everyone choose a particular article or work to read and prepare comments for the next class period.

130) When a student asks a question, feign confusion in order to get another student to clarify.

131) To generate discussion, choose topics and materials that are especially controversial.
FAIR EXAMS AND GRADING

Assignments

132) Ask the students to summarize their lecture notes as a part of the final grade.

- One professor expects students to do more than simply record the main points of his lectures. He requires them to synthesize the material into organized prose, and encourage them to react to, disagree with, and/or supplement what he presented in class. He then grades their revised notes according to predetermined criteria.

133) Assign weekly worksheets or homework problems. For straightforward assignments, give the students an answer sheet as soon as they turn in their work.

- These assignments don't have to be rigorously graded. One professor "spot-grades" about five students' assignments per week, and merely checks the others as complete or incomplete. He purposefully avoids grading the written worksheets strictly, so that students can "see that writing is a way of discovering things for themselves. It is not necessarily something to evaluate and assess. It's a tool for them to learn by."

134) Give students the option of either writing a term paper or taking a final.

135) Assign many papers or problem sets during the course, but allow the students the option of not completing two or three or dropping one of their grades.

136) Tell students when a paper is due, but remain flexible for students who need extensions.

- One professor said, "I don't encourage students to hand papers in late but I was a student and the expectation that personal life should not come before intellectual life is stupid. When a student does get an extension, I tell her/him when I expect the paper, (usually the next class meeting), and to let me know if there is a problem getting it in by then."

Grading Practices

137) Reward students who come to office hours for extra help.

- When making a decision about a borderline grade, some professors consider a student's efforts to get extra help at office hours. One professor will frequently "strike bargains" with students who come in for help, for example, dropping a bad grade on the first test if the student can make a "B" average on remaining tests.

138) Take attendance.

- One professor lets the student know that their good attendance can help him make a decision about a borderline grade. This gives the students the impression that the instructor is flexible, and that he takes motivation into
consideration when determining grades. Another professor bases a specified percentage of a student's final grade on attendance.

139) Designate the first exam as "unofficial," i.e., it can only help a student's grade, not hurt it.

140) Encourage students who are doing poorly by counting their final exam as 100% of their grade.

141) Let students know that if they have contributed a great deal to class discussion, you will take it into consideration if their grade is borderline.

142) If a student paper is worse than a C, grade it "NG" (no grade). This means that the student won't get a grade until the paper is revised.
   • The professor who uses this technique feels that a "no grade" reminds the student that there are minimal standards of writing which should be met.

143) Do not return a homework set that has been graded by someone else without going through the students' work yourself. Work in-class any problems that the students had particular difficulty with.

144) Evaluate some class requirements on a pass/fail basis.
   • One professor grades the students' lab work pass/fail. He wants the students to enjoy the experience and learn without "driving themselves crazy."

145) Give students an opportunity to explain their multiple choice selections.
   • One professor gives students the opportunity to explain why they chose an incorrect answer. He has found that "often students show a sophisticated level of understanding in their explanation and I will give them credit for it."

146) Present the syllabus as a contract and tell students that if they take the course, they will be expected to abide by the contract. Publish your grading criterion and exam policies.
   • A few professors said that the criterion that they publish is always more stringent than the actual criterion that they use, avoiding the problem of the students who complain that they missed an A by only 1 point.

147) Reward students who do well all semester by exempting them from the final.

148) If most of the students do poorly on a portion of an exam, provide an opportunity for the students to redo that part of the exam.
149) On papers, provide comments in addition to a grade and give students the option of rewriting a paper. Encourage them to meet with you before they rewrite.

150) Substitute a cumulative homework grade for a low hourly exam grade. It is a way to reward students who work conscientiously and diligently on homework assignments.

151) Put student grades on a computer and bring in the spreadsheet after each homework assignment to show students where they stand. The students get an accurate picture of their progress throughout the semester, not just at exam time.

152) Get the first real assignment/paper graded and to the students before the drop/add deadline, so they have an indication of whether they want to stay in the class or not.

Helping Students Review

153) Provide detailed study sheets which require students to synthesize material from the books and lectures.

- One professor states, "I know from conversations with students who have had the course in the past, that what students remember is what they themselves synthesized and organized and thought about and put together." She gives her students study sheets which ask them to think about broad topics in an organized way. Her tests then require students to put together the topics from the study sheet in a different fashion.

154) Hold a review session before major exams.

- One professor holds a review session the night before the first exam, where he fields questions from students and eases their anxiety about performing well. Another suggestion is to hold a review session on, or at least devote class time to, the subject of how to make use of time, how to organize essay test answers, etc. This is especially helpful about a week before the first exam in a course.

155) Schedule appointments with students who are doing poorly.

156) Keep old exams on file at a local copy center, or in the exam file center at the UMC.

157) Help students to prepare for exams by asking them to write "mini-lectures" from their notes.

158) If you give problem sets as homework, always include several problems from previous chapters.

- One professor noted that this technique helps students see connections and synthesize material. Students appreciate the structured review this technique provides.
159) In preparation for an exam, give students practice questions and encourage them to make up their own questions as a means of reviewing. Tell them that you will consider the questions that they write as possible exam questions.

- One professor in the sciences gives the assignment this way: "Decide what would be appropriate questions for a midterm exam." He finds that as a review exercise "this helps the students focus on the most important ideas, not on the minutia."

160) Point out useful problem sets; review sections, and the kind of questions the students will be expected to answer.

- Almost every faculty member interviewed mentioned that they are interested in students learning concepts and thinking skills for the discipline as opposed to facts or fragments.

161) In preparation for an essay exam, spend time lecturing on writing skills and model for students the kind of essay that you will expect.

162) Go over problems from last year's tests to give students an idea of the kind of problems or questions that they will be expected to answers.

Testing Techniques

163) Test the students with a variety of methods (i.e., multiple choice, short answer, essay, diagrams, etc.) and from a variety of angles.

- One professor designs his tests so that the first question is very direct, and based on a homework problem. The following questions use different approaches to test the students. For example, students have to explain/analyze a concept verbally, figure out a solution mathematically, and work with a graph. Another professor gives her students a choice of question types.

164) Give the students weekly ten- or fifteen-minute quizzes. Immediately after the quiz, distribute a handout with the answers.

- One professor notes that this technique not only helps students review, but also provides him with valuable feedback about how well the topic was presented.

165) Allow adequate time for cautious students to finish their exams.

166) Make all exams reflect concepts from homework problems.

167) Give many exams per course. If possible, provide immediate feedback. Go over difficult exam problems in class.

168) Work out all homework and exam problems before you give them to the students.

- Some professors use this rule of thumb: if it takes you 20 minutes, it should take the students an hour.
169) Test students on synthesis level questions.

- Both objective and essay tests can be structured so that students must integrate the material they've studied. For example, on a multiple choice test, present the student with a new situation/graph/problem, and ask them to choose which theory/concept/formula would best apply. One professor asks students to compare processes which weren't explicitly contrasted in the book or lecture.

170) If your students give class presentations, put some questions on the exam which cover the material they presented.

- One professor who does this noted two benefits of this practice: (1) it tells students that their input is vital and (2) it encourages high attendance when student presentations are given.

171) Give open book exams when you are interested in testing students' analytical and critical thinking skills.

172) Evaluate students on written essays instead of exams.

- Many professors thought that students often studied for exams by focusing narrowly, losing track of large themes and ongoing changes.

173) Include essays on exams, even in large lecture classes.

- A number of professors emphasized the importance of written work. Many professors in the sciences or engineering said that they could not fully evaluate the students' understanding of a concept without essay questions.

- One professor in the sciences gives short essay questions that are graded on the number of facts they contain. A 10 point question should contain 10 facts, a 20 point question 20 facts etc. With this system, students do not complain that essays are too subjective.

174) Give a make-up exam at the end of the semester.

- One professor thought that the make-up exam eliminated the policing of excuses and illnesses on exam days and it helps the student who is having a "bad day." The grade can replace a missed exam or it can replace a lower grade. The professor felt that the make-up was helpful to the student who got off to a slow start in the semester and alleviated the anxiety associated with test taking.

175) In recitation sections, require the T.A.s to give unannounced quizzes. The students will be much more serious about the recitation.

176) Use multiple choice questions that represent the context of an argument instead of factual regurgitation.
177) Give exams that have a take-home part and an in-class part. For the take-home part, encourage students to work with other students and learn from one another.

178) Teach a course using a "self-paced" system.

- One professor explains that he presents material quickly and then gives a "first chance exam," which all students are required to take. Students who do well can take off the next class, which is a review of the material that was on the test. Students who need additional help then have another week to work with the material before taking the "second chance" exam.

179) Give frequent exams to assess student progress and understanding.

- One professor uses the weekly exam as a teaching tool. He said, "students are trained to do best on exams and I take advantage of that. It gives students immediate feedback on where they are and I know if they understood a topic or not."

- Another professor gives a "mastery exam" halfway through the semester to insure that students understand the basic concepts that are the foundation of the course. The mastery test is pass/fail and the students may take it as many times as they want, but they must pass it in order to pass the course.

180) Give a pre-test and a post-test to assess how much students have actually learned.
FACULTY INTERVIEWED

Herbert Alpern
David Armstrong
Albert Bartlett
Marty Bickman
Melvin Branch
William Briggs
Cynthia Carey
Lee Chambers-Schiller
Milford Cundiff
Robert Davis
Barbara Doscher
Luis Eades
John Falconer
Igor Gamow
Robert Goodrich
Michael Grant
James Hanken
James Hargett
Lewis Harvey
Nicholas Helburn
Nancy Hill
Jack Hodges
Robert Hunter
James Hynes
Jack Kelso
Phyllis Kenevan
William Krantz
Nicholas Lee

Psychology
Center for Interdisciplinary Studies
Physics
English
Mechanical Engineering
Mathematics
EPO Biology
History
Center for Interdisciplinary Studies
Chemical Engineering
Music
Fine Arts
Chemical Engineering
Chemical Engineering
Mathematics
EPO Biology
EPO Biology
Oriental Languages and Literature
Psychology
Geography
Center for Interdisciplinary Studies
Mathematics
Sociology
Chemistry
Anthropology
Philosophy
Chemical Engineering
Slavic Languages and Literature
Ralph Mann
Gary McClelland
Marjorie McIntosh
Arlan Norman
Reza Ramazani
Lillian Robinson
Lawrence Singell
Sven Steinmo
Walter Stone
Thomas Swain
John Taylor
Donald Weatherly
Marcia Westkott
R L Widmann
John Williamson
William Winter

History
Psychology
History
Chemistry
Economics
Spanish & Portuguese
Economics
Political Science
Political Science
EPO Biology
Physics
Psychology
Women Studies
English
Mathematics
Political Science