

ORGANISATION/CLARITY

SEQ Factor: 3

Targeted Teaching Strategies
Improving Academic Teaching Project

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ORGANISATION/CLARITY

The essential ingredients of this factor are structure and clarity. By cuing learners about the organization of subject matter, by providing advance organisers, by scheduling student exercises and assignments appropriately and by inducing appropriate cognitive schemata teachers assist students' memory retrieval and formation of linkages between new material and material previously learned. These principles of teaching and learning are time-honored and widely accepted elements of information processing theories of learning. While clarity is clearly an expected outcome of careful preparation and good organization, it can be important as a correlate of teacher knowledge of the subject, with teacher uncertainty producing vagueness which inhibits student understanding. Students who perceive instruction to be well organised and clear are, thus, likely to enjoy enhanced knowledge and understanding of course material. The Organization factor is pertinent to several accepted principles of teaching and learning.

The following ideas are suggested and used by outstanding university lecturers across a range of institutions and disciplines. Lecturers participating in the "Improving Academic Teaching" Project found these strategies most beneficial when, *after considering all the ideas*, they selected *no more than three or four* which appeared potentially most profitable and *made a commitment* to apply or adapt them to improve their teaching effectiveness.

I. Planning for Organisation and Clarity

1. Empathise with the students' difficulties in learning the material for the first time.

"It is important to distinguish between appreciating the difficulty students have in understanding new material, and the rather simpler but less effective option of allowing the subject difficulty to act as an excuse for the lecturer's quality of teaching or the students' quality of learning," according to an outstanding lecturer in Education.

A faculty member in the sciences says that he noticed that he had taught the course better the first time than he did the second time. "When I asked myself why, I realised that in preparing the course for the first time, I really had to work hard to master certain parts of the material in order to explain it to my students. The next time, however, these concepts no longer seemed difficult to me. Unfortunately, I forgot that they would still be difficult for the students. Now I color-code all of my lecture notes, keying the parts that students are likely to find difficult and making a special effort to make points very clear."

A Physics professor also tries to put himself in the students' shoes. "After I have finished writing up a set of lecture notes," he says, "I review them carefully, asking myself: 'What might my

students find hard to follow in that line of reasoning?' 'What examples might make that more clear?' This has now become the most important part of my lecture preparation."

Several faculty members report making notes to themselves of explanations that worked well and those that didn't. They also keep records of the kinds of errors students most commonly make in assignments and exams as a reminder of what students find most difficult to understand.

2. Plan your instruction around a conceptual framework on which students can hang major ideas and the factual information of a course.

Planning a clear framework which would be useful and meaningful to students is a distinct feature of the approach used by several very effective lecturers across a broad spectrum of disciplines.

The framework may be a structure, a theme, a conceptual typology, a controversial issue, or a theory. It should be made salient to your students through repeated reference.

As one professor of Physiology points out, "To the uninitiated, our field looks like a mass of facts; by establishing a conceptual framework, I minimise the amount of rote memorization my students have to do."

Often the framework can be represented symbolically or graphically. Another physiologist, for example, begins each lecture by drawing the same outline of the whole human brain on the blackboard. Details of the brain, in terms of structures and processes, change according to the specific topics to be covered in that day's lecture.

A sociology professor uses a basic typology as a conceptual framework for his course; this typology is sketched on the blackboard each day as a matrix into which new information is written. He stresses the need to tie basic facts together, to make the conceptual linkages for his students.

A History professor uses the concept "Attitudes toward Natural Resources" rather than chronology as an organizing principle. A professor of Spanish literature identifies two or three major concepts (e.g., irony or tragedy) and applies them repeatedly in lecture, discussion and assignments to reinforce student understanding.

3. Prepare a detailed course syllabus.

"My syllabus usually runs about 15 pages," says a professor of Education. "It is organised by class session and each section consists of a major topic, four to eight important study questions or issues my students are expected to understand or be prepared to discuss. Required reading and recommended supplemental readings are included.

The syllabus also describes assignments, grading procedures, and competencies my students are expected to have (i.e., things they are expected to be able to do) by the end of the course."

In addition to his own detailed syllabus, a professor of Forestry also prepares what he calls a "quasi-syllabus" for his students.

"My students' syllabus (sold to them at cost) includes a course outline and a complete set of graphs, charts, and biological drawings which I show on slides during lectures. In this way, my students can study and review supplementary materials outside of class in conjunction with the text and notes taken during lecture."

Many faculty members state the objectives of their course in a syllabus. Some include projected topics for each class session and what they hope to accomplish in the session. Says a professor of Physics, "I like to lay out the course in some detail for my students. I even make projections of the topics and purposes of each class session. I have never yet stuck to the schedule, but laying it out organises my thinking. I think it helps students feel more organised, too."

4. Keeping a journal.

One History professor has found it very effective to keep a brief journal or diary for each course. "After each lecture, I jot down a few notes about how the class went: explanations and examples that worked well and those that didn't, students' difficulties with the text, techniques for generating discussions, and so forth. If something went very badly, I correct it at the next meeting. For the most part, however, I keep the journal to help me improve the course next time."

Although a journal of this type could be beneficial to any teacher, its value is greatest for new instructors or for faculty members teaching a new course or a course they teach only every few years.

Lecturers in the Improving Academic Teaching Project who keep such a record said that it not only helps in fixing what didn't work, but also allows them to draw on strengths they know students have acquired from really successful strategies.

5. Rework completely your lecture notes each time you teach a course, particularly if you are in a rapidly changing field.

"It's important to completely redo my notes each time I teach the course," says an Economics professor. "It helps me rethink the material so that the ideas seem fresh and new to me as well as to my students. This increases my enthusiasm for the subject matter which I think is communicated to my students."

"My lectures change somewhat every time I teach the course," says a professor of Psychology. "In this way, over a period of six to eight years, they change quite radically. This is partly because the field is changing, but it is also because my own ideas continue to develop."

Although the myth of the professor who teaches with yellowed and musty notes is almost unheard of in a major university today, the importance of re-creating lecture notes each time a course is taught - even if back-to-back within the same year - was stressed by nearly all excellent teachers as a way of keeping themselves fresh and interested as well as interesting to their students.

6. Prepare handouts of the lecture outline and any detailed formulae, derivations, or illustrations to be presented in class.

"My handouts include the essential points of my lecture, including definitions, notations, important formulae and derivations," says one professor of Business Administration. "Students could not cut class and rely solely on the notes, however, because they are not self-explanatory. They are designed to help students follow the main structure of my lecture and to keep them from getting bogged down in copying details."

Several excellent teachers report that they make judicious use of handouts covering the most important, detailed, or complex topics covered in their lectures.

Not everyone favours handouts, however. "Analytic material can't be learned by watching and reading alone," says one Engineering professor. "It must be learned by doing, by writing it out." He prefers to put important material on the blackboard, discussing the steps and labelling them as he lectures to help students in their note-taking.

Several outstanding lecturers have adopted the strategy of providing handouts that contain gaps to be filled in by students. A lecturer in Chemistry explained that this is a far more efficient way of keeping students active in the learning process than having them transcribe the entire lecture content. "I was initially concerned that the students would stop showing up to the large lecture sessions, or show less interest in the lecture if they were given all the notes," he said, "but using this strategy has actually boosted both attendance and attention!"

7. Reread the texts assigned to students.

Teachers in several disciplines report that a major part of their preparation is rereading the texts assigned to students. "I reread the text assignment over the weekend not only to ensure that it is fresh in my mind," says one History professor, "but also so I can acknowledge the parts I found dull, unclear, or especially important."

An English professor says, "No matter how well I think I know the literary texts assigned, I reread them very carefully so that they are vivid in my mind."

An Anatomy professor reports that he rereads the text just after he finished his lecture notes. "I always check my lecture notes against the text a final time," he says, "to be sure that I am complementing rather than repeating the text and to note any disagreements I have with its author."

8. Audit the same or related courses taught by colleagues.

One faculty member of Computer Science reports that he makes it a habit to audit other faculty members' courses.

"Particularly if I know I am scheduled to teach a course for the first time. I make a point of taking the course from the best instructor available. I attend all of the class sessions and usually do most of the homework. I find this a much easier way to do some advanced preparation than sitting down and reading several textbooks. It forces me to do some preparation each week."

"Taking the course from a colleague not only provides a good review of content, but I often pick up two or three good teaching techniques as well. Later, I do additional research and design the course my own way, but I have the great advantage of building on a model created by a colleague."

9. Teach the same course the next semester.

One Chemistry professor frequently teaches the same course "back to back" in two consecutive terms. "This way I can maximise my learning from mistakes I have made."

"I make notes to myself about what went well in the course and what didn't as it goes along," he says. "For example, I might make a note saying 'Don't forget to emphasise this point before that point.' Executing these suggestions to myself the very next semester reinforces my own learning."

10. Use an abbreviated set of lecture notes.

Many excellent teachers describe a two-stage process in the preparation of their lecture notes. A History professor, for example, says "First, I write out a detailed set of lecture notes over the weekend or the night before class. Then, on the morning before class, I take about an hour and a half to reduce these notes to a brief outline on index cards."

"Students like structure," he explains. "But they do not like terribly formal lectures delivered verbatim. Once I have worked out fully what I want to say, I communicate it more forcefully and more informally from a small number of index cards."

11. Review the relevant sections of several textbooks for each lecture topic.

A faculty member teaching a lower division course in the biological sciences says that in preparing each lecture he starts by comparing three or four introductory texts. He then looks at one or two specialised books on the given concept or biological process.

"There is no such thing as the perfect textbook; each has its strengths and weaknesses. By comparing several approaches, I am able to distill the best definitions, explanations and examples and am less likely to overlook important aspects of the topic. It also helps me to complement the textbook rather than repeat it in lectures. I also include simplified accounts of recent developments in the field taken from my own professional reading whenever it is appropriate."

12. Keep a set of cumulative notes for each course topic.

Most teachers keep a chronological set of lecture notes from the first to the most recent time they have taught a course. Many teachers keep separate notes for each lecture topic. "To these I add research articles, newspaper clippings, cartoons, ideas for assignments or exam questions and notes to myself for improving the lecture or discussion," reports a professor of English.

By keeping separate topic files and inserting new materials and notes of new ideas throughout the year, it becomes much easier to prepare a new set of lecture notes with improved or more up-to-date examples, assignments, or explanations the next time you teach.

13. Prepare clear, interesting and uncluttered overheads or other visual displays to enhance and clarify your presentation.

A number of award-winning lecturers stressed the importance of clear, uncluttered overheads. A lecturer in Music notes that overheads should never contain more than three or four succinct points or ideas. "Colour and space are the key ingredients in making the information on overheads accessible to students," she says.

A lecturer in Chemistry prefers to prepare overhead transparencies by hand to give him more freedom to be creative, so that students maintain attention and interest. "When students can easily see the point of a transparency, they can follow the logic of a lecture. The whole presentation appears to be clearer and more organised," he explains.

14. Develop activities which lead students to an understanding of the concepts or issues in the class.

Several outstanding lecturers found that issues become more clearly understood when students are actively "doing something" to learn rather than being told or shown by the lecturer. "It can take a lot of thoughtful planning to devise a suitable activity, especially given the restrictions of a lecture session," a lecturer in Economics concedes, "but the resulting improvement in learning is well worth it."

A lecturer in Special Education has her students roll up in wheelchairs for a day to develop a better appreciation of the experience of being disabled.

II. Teaching for Organisation and Clarity**15. Write the objectives for a class on the board before you begin, or have them prominently displayed on an overhead projector.**

"A beginning statement of objectives or directions is one of the most important aspects of teaching. Students need to know where you are going so that they can understand where they are going."

A professor of History explains, "I come to class a few minutes early and write three to five objectives on the board. As class begins I present my objectives for that day for that class. During my presentation I make specific references to my objectives as I go along. This way students know what I'm thinking about while I'm talking. They also learn why I think certain points are important."

16. Begin each lecture by letting your students know what you are going to talk about and why.

An Engineering professor refers to this as his "battle plan". "At the beginning of the hour, I give my students a battle plan so they know where the discussion is going and can follow it more easily," he says. "For example, I tell my students that I'm going to discuss such-and-such a topic for the first twenty minutes, show them how to use it in the next twenty minutes, and then take questions in the last ten minutes. By laying out exactly what I am going to do, I eliminate a lot of student confusion. I don't want students spending the hour wondering, 'Why is he talking about that?' or 'What does that have to do with anything?' instead of concentrating on what I have to say."

17. Take your students' perceptions into account when using and assessing your organisational structure.

A number of lecturers involved in the Improving Academic Teaching Project were initially surprised by feedback from students which suggested deficits in organisation. "I realised, in consultation with my students, that while my organisational format made sense to me, it was confusing to them because other related subjects were organised according to a different framework," one lecturer explained. "We - the students and I - decided that our format was fine; I simply needed to take more care in applying it to explain what we were covering and how different parts of the subject related."

"The moral of the story is, don't assume your students have the same sense of your logic that you do!"

18. Focus your lectures on a few main points and omit unnecessary exceptions, complexities, or details.

"The key to explaining clearly," says one Economics professor, "is to limit the amount of material covered in a single lecture. The critical error made by many faculty members is trying to include too much by a factor of six."

"I generally focus on three main points and repeat these in various ways throughout my lecture. Beginning undergraduates do not need to be exposed to the intricacies and complexities of a discipline; indeed, introducing them to these will only confuse them. Introductory courses are best taught by focusing on the fundamentals, using generalizations, and avoiding too many exceptions to the rule."

A History professor concurs. "I tell undergraduates, 'Here is what I think you can say is true, despite all the past and current debates of historians.' I don't go into those debates because they are complex and undergraduates are not sophisticated enough about historiography to appreciate them."

19. Tell 'em what you're going to tell 'em; tell 'em; then tell 'em what you told 'em.

Although it may appear to be an over-simplification, many excellent teachers cite the old adage, "tell 'em what you're going to tell 'em; tell 'em; then tell 'em what you told 'em." In the case of lectures on complex subjects, the general principle is a good one which can be adapted to major topics within a lecture as well as to the overall lecture itself.

20. Structure a lecture as you would a journal article.

"Each lecture should have a clearly defined beginning, middle, and end," a professor of History notes. A faculty member in Computer Science concurs, saying that he prepares his lectures so that they have the oral equivalents of an *introduction, headings, subheadings, summary, and conclusion*.

"Orally highlighting the structure of a lecture serves the same communication functions as using paragraphs and different type faces in a journal article," he says. "It tells the audience what the topic is, why it is important, what its chief components and their relationships are, and what conclusions we can draw.

"I firmly believe in sharing the structure and reasoning of my lectures with the students," he explains. "I begin each lecture by stating my objectives. For example, 'Today we are going to discuss X and its effects on Y and Z.' I make frequent transitional phrases, and I leave time to summarise the major points at the end of the hour."

21. Write an outline for your lecture on the blackboard before you begin or outline your lecture on the blackboard as it develops.

One professor of Physiology says that he picked this up from a colleague when they were team-teaching several years ago. "I put the outline of my lecture in a corner of the blackboard when I first come into class," he says. "That way students can tell at a glance when I've shifted topics and where we are in the day's discussion. I also make frequent reference to the outline to alert students to transitions and the relationships between topics."

One professor in the biological sciences says that she always outlines her lectures on the board as she goes along, using colored chalk to differentiate major and subordinate heads or points and to diagram relationships. On a separate section of the blackboard she also writes down technical terms or names of scientists that her students might not know how to spell.

"The outline serves to reinforce visually what I am saying," she explains. "Furthermore, it makes clear to everyone where we have been and where we are going. An added bonus is that writing the outline on the board as I go along slows down my lecture pace; it serves as an automatic 'brake' and keeps me from racing through the material."

"I prefer to use the board as I go along," an Engineering professor says. "I think this emphasises the importance of major ideas better because they are revealed in the context of the discussion."

22. Define carefully all concepts and terms.

A faculty member in the biological sciences points out that you cannot assume that students know or remember concepts and terms from previous courses. "If I use a word for the first time, I write it on the board and define it. I do this even if it is a concept or term that students have presumably learned in introductory biology and chemistry courses."

Another faculty member underscores the importance of giving students a clear definition of terms. "If the term is not defined or is poorly defined in their textbook, I point that out and then give them the clearest definition I have been able to find." He frequently looks at three or four introductory texts to find the clearest definition of a term, especially if it is either not defined or not defined well in the textbook used in the course.

23. Rephrase explanations of major points several times.

"Repetition leads to learning," one science professor says. "I repeat major points several times from a different direction or in different words."

"No single explanation will be clear to all students," points out a professor of Business Administration. "By using different language or different examples, I maximise the chances that every student will eventually understand."

A Political Science professor also consciously alters the words he uses. "I have a tendency to say things twice," he says, "first, formally, and then colloquially."

An Engineering professor reports that he develops the same point in two or three different modes, e.g., mathematically, verbally, and graphically.

24. Use lots of concrete or memorable examples.

Most excellent teachers agree that the choice of examples is very important, favoring those that are anecdotal, personal, or humorous because they find that students tend to remember these best. "I use concrete examples wherever possible," says an Anatomy professor. "For instance, I describe a particular body organ by comparing its size or texture to an object familiar to students, like a walnut."

An Economics professor also places importance on using concrete examples of interest to students. "I use specific examples whenever I can. In talking about inflation and price controls I'll use the Prince tennis rackets or Sony Walkmans rather than apples or a general product."

A Forestry professor uses the same strategy. "In talking about acre-feet of water, first I define it formally and then I give several examples which will help them appreciate the amount of water represented, such as 'equivalent to 77,000,000 ice cubes.' Students tend to remember examples like that," he explains.

25. Acknowledge the difficulty of concepts students are likely to find hard to understand.

"Acknowledging difficulty avoids the risk of belittling the students' efforts in mastering the concept, or the students themselves if they do not master the material easily," according to an exceptional Chemistry lecturer. "It is important to admit to the difficulty of understanding material for the first time, but not to make that difficulty an excuse. A good way of achieving this aim is to offer a specific 'strategy' for mastering the material, such as '...so listen carefully...', or '...so remember this simple example'".

One Engineering teacher says, "I consciously cue students to the most difficult ideas by saying such things as, 'Almost everyone has difficulty with this one, so listen closely.' Because the level of students' attention varies throughout the hour, it is important to get everyone listening carefully before introducing a new concept or explaining a difficult point".

A Forestry professor agrees. "I make a special effort to slow down and get everyone's attention when I come to a concept I know students will find difficult."

26. Demonstrate a concept rather than simply describing it.

Whenever possible, try to avoid talking about something in its absence," one teacher says.

"For example, don't tell students how to present a logical argument; present a logical argument and help them to analyze it.

Don't describe how to solve a problem; demonstrate how to solve it on the blackboard; and label and describe the steps and your reasons for them as you go."

Demonstrations are superior to discussions because they make use of additional senses. Taking examples from everyday experiences, even if they cannot be demonstrated in class, will help students to visualise or re-experience them and reinforce their learning.

Use visual imagery whenever possible. Even if a live demonstration or the use of visual aids is not practical, the use of metaphors and analogies that give students a mental image to draw upon can help reinforce their understanding and recall.

Teachers can often make use of slides, maps, tape recordings, live or filmed dramatizations, charts, diagrams, demonstrations, and actual cultural artifacts to illustrate the subject matter.

27. Use "closed lists" whenever possible in your lectures.

A Political Science teacher says he makes frequent use of closed lists. "I make a habit of saying things like, 'There are three main implications of X, number one is...' or 'Remember in the last lecture, we were discussing the six principal steps that an administrator goes through when, these are Number one, etc.'"

28. Schedule a break if your class exceeds one hour.

After an hour, it is difficult for students to concentrate and take notes steadily; their efficiency drops. Many teachers provide a break after 50 minutes or so to give students a chance to regain their concentration.

A Physics teacher always takes a short break in his 1 1/2 hour class. "I have students stretch at their seats to wake them up and get their blood circulating." A faculty member in the biological sciences has students take a "t'ai chi" break, leading them through exercises.

29. Give students a list of questions which cover topics to be addressed in your lecture.

One History professor does this routinely. "By outlining my lecture as a series of questions," she explains, "I hope to stimulate students to think actively during the presentation. The questions are designed to give them a conceptual framework and guide so they can identify where we are and where we are going in the overall discussion.

"I realise that it is difficult for students to listen attentively for a full hour," she says. "Providing them with an outline of the lecture in question format allows them to pick up the thread of the discussion more quickly as their attention fades in and out."

30. Organise your lectures into 10 minute segments.

A faculty member who reports doing this says that he learned the trick from an article in Science written by Nobel Laureate, Sir Lawrence Bragg.

In the original article, Bragg says, "Some try to get the timing of a lecture right by, as they say, 'running over it beforehand' and seeing how long it takes... . I prefer to divide it into some half dozen portions, and allocate about 10 minutes to each, marking this timing in the margin of my rough notes... ."

"The advantage of dividing the time up in this way is that the pace can be adjusted during the lecture when it is clear that it is going to be too long or (rarely) too short. If time is running long, the part to shorten is the middle where it will be little noticed. The beginning or the end must not be hurried... ." ("The Art of Talking about Science," Science, Vol. 154, December, 1966).

31. Begin and end your lecture or discussions with a summary statement.

A History professor finds it helpful to place his watch in full view on the desk or lectern. "I watch the clock carefully to be sure that there is time to summarise the day's discussion. Then, at the beginning of the next class session, I sum up the previous lecture once more before moving on to a new topic."

"Students crave both continuity and sense of closure," he explains. "They do not like unfinished presentations. At the same time, because none of us likes repetition, I try hard to use different words and examples in each summary. The best way I have found to avoid redundancy is to note on an index card the exact words I have used at the end of a lecture, so that I am reminded to vary them in the brief recapitulation I give at the beginning of the next class meeting."

A professor of Business Administration also uses this technique. "Because each concept in this course builds upon what has gone before, it is important for students to see how each new topic relates to what they have already learned as well as to what they will be learning in the coming weeks. I find the most effective way of doing this is to begin with a brief summary of what came before, followed by a brief preview of what will come next."

32. Begin each class period with a brief summary of the main points covered in the last meeting and then call for students' questions.

The advantage of summarizing and asking questions at the beginning of a class period is that, "students are fresher and after a brief recapitulation, they are more likely to realise and acknowledge if they have any problems," as one teacher puts it. A variation on this technique is to

summarise and call for questions whenever there is a major transition from one topic to another within the same lecture.

33. Use the blackboards to help you summarise.

Several excellent teachers stressed that they plan their blackboard work carefully so that the most important concepts are still visible at the end of the hour and can be used in making a summary.

"I consciously attempt to write clearly and legibly and to be sure that my boardwork is organised and is visible to everyone," one Engineering professor says. "At the end of the class, I use this boardwork to go back over important theorems or equations, underlining and boxing in with colored chalk important concepts and steps."

34. Explicitly call attention to the most important ideas in each lecture.

"I began to emphasise the main points about ten years ago," says one Political Science professor, "when I discovered that you can't rely on undergraduates to intuitively know what the most important points are. You have to tell them."

Faculty members in several disciplines stress the need to call students' attention to the most important ideas being presented. Some teachers announce the importance of an idea before presenting it, saying such things as "This is really important, so you have to be alert." Other teachers emphasise the most important ideas when summarizing, saying "The most important thing to remember here is..." or "This is so important that everyone of you should have it engraved on a gold plaque and hung over your bed!" as one professor of Computer Science puts it. "There is no point in my students having to guess what is important if I can tell them," he says.

35. Use dramatic pauses and repetition to draw students' attention to the main ideas.

Several teachers stress the need for repetition (using different language or examples) to communicate the most important points in their lectures.

Dramatic pauses are another way to highlight important ideas. A History professor says that she used to tell her students, "The main point is..." but in a matter-of-fact manner, almost as an aside. "I discovered that many of my students did not get the message," she explains. "Now I indicate a main point by pausing to get my students' full attention and then saying emphatically, 'This is the really important consideration!' Then I pause again to be sure they are prepared to write it down. If not, I restate the importance of what is to follow."

A Sociology professor also uses dramatic pauses and a sense of timing to stress the most important points in his lectures. "I structure each lecture to build up to the crucial point of the topic," he says. "Then I announce it in a sweeping manner, timed to occur at the end of the class period."

These strategies are part of a package of materials available in:

Marsh, H. W., and Roche, L. A. (1994). *The Use of Students' Evaluations of University Teaching to Improve Teaching Effectiveness*. Canberra: Department of Employment, Education and Training. Further information on the Improving Academic Teaching Project can be found in Marsh, H. W., and Roche, L. (1993). The use of students' evaluations and an individually structured intervention to enhance university teaching effectiveness. *American Educational Research Journal*, 30, 217-251.

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