

LEARNING/ACADEMIC VALUE

SEEQ Factor: 1

Targeting Teaching Strategies
Improving Academic Teaching Project
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LEARNING/ACADEMIC VALUE

In essence this factor denotes subjective feelings of success obtained through participation in a course and/or at the hands of a particular teacher. Students who are challenged and stimulated, who consider their learning through the course to have been worthwhile, whose interest in the subject was increased, who are conscious of having understood the subject-matter and who generally rate the course highly are clearly expressing feelings of accomplishment on challenging learning tasks.

The following ideas are suggested and used by out-standing 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 Learning and Academic Value

1. Choose the most appropriate methods to facilitate student learning in your subject area.

Several very successful lecturers have pointed out that often, subjects are taught using traditional lectures when more effective alternatives may be available. "Traditional lecturing methods are often used by default, in situations where the possibility of more effective alternatives either have not been considered, appear to be 'too radical', or involve too much time and effort to establish" says an outstanding Education lecturer.

While it is important to be comfortable with an instructional method, as well as to have the resources (time, finances) available to set it up, it is also necessary to consider potential advantages in terms of the quality of students' learning and more efficient use of lecturers' time.

Examples of alternative methods include Problem-Based Learning sessions; Syndicate groups working on real research or simulated problems; Tutored Videotape Instruction; and Computer Assisted Instruction. Of course, it is possible to combine any of these methods with a lecture program, rather than breaking away from lecturing altogether. Most universities have a Teaching Development Centre which can provide information and expertise relating to alternative teaching methods.

There are also many strategies for adapting a lecture format to be anything but the traditional "chalk & talk" session. Many of the following ideas, in this and in the other Targeted Teaching Strategy booklets, provide examples of these alternatives.

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. Divide your course into levels of conceptual difficulty.

A Zoology professor focuses the first part of his course on fundamentals and the second part on state-of-the-art research.

"The first six weeks cover basic concepts and fundamental processes all my students must learn about the subject," he says. "In this segment I eliminate many 'nice to know' concepts in favour of going over the basics in a very thorough way.

"Because my students are quite heterogeneous (including undergraduates who have taken only introductory Biology as well as graduate students in Zoology), I spend the first six weeks making certain that everyone is brought up to approximately the same level of understanding of the fundamentals. Then in the last weeks of the course, I introduce the latest research experiments in the field. In effect, the first half of the course is made up of 'little white lies,' that is, the simplified constructs of the field. In the latter weeks, the emphasis is on how research is actually done and how little we really know."

A professor of Physics uses a similar strategy throughout his lower-division courses. He divides course topics into three levels: those which are "Basic" (i.e., should be mastered by every student); those which are "Recommended" (i.e., should be mastered by every student seeking a good competence in the subject); and those which are "Optional" (i.e., need to be mastered by those students with special interest in the subject).

4. Focus your course on the classic issues and concepts in your discipline.

A History professor explains that she has moved away from presenting the most esoteric and up-to-date concerns of professional historians in her undergraduate courses.

"The most interesting issues and themes for undergraduates," she explains, "generally turn out to be those which originally excited historians about a particular person, event, or epoch, not the historiographical controversies of present-day historians. The classic issue are the ones which attracted me to the field," she says, "and I find that they are still the most exciting for my students."

Following this approach does not mean that you cannot introduce new research findings where they are relevant, of course. Nor does this suggest that ideas which have little or no current validity should be taught. It does mean that, in limiting your coverage, you select the major classic themes and concepts wherever possible.

II. Teaching for Learning and Academic Value

5. Take into account what your students want to know.

Being aware of the students' expectations for a course is a critical prerequisite for obtaining their attention, interest and participation, according to a number of outstanding lecturers in various disciplines. "It is important to be seen to be aiming to meet their needs, rather than simply following a checklist of things to be taught" says a lecturer in Physics.

There are a number of ways to learn about students' expectations for a course. Several relevant ideas are included below (see also packet 5 for ideas concerning "Individual Rapport").

6. Assign "minute papers" at the end of some lectures.

Several outstanding lecturers have found that asking just two or three open-ended questions after some lectures is a very effective means of establishing what students are understanding, and what their preferences are regarding content and method. Some also found it useful in allowing students to see what they have achieved in a session.

The Physics professor who invented this process says, "Several times during the term - about once a week - I come to class a little early. I write two questions on the board:

- 1) *What's the most significant thing you learned today?*
- 2) *What question is uppermost in your mind at the end of today's class session?*

"Then, I make my presentation for 49 minutes. One minute before the end of the period, I say to the class, 'Take out a piece of paper. You have one minute to answer these two questions.' My students sign the papers and pass them to the centre aisle. I pick them up on my way out of class. I give them to my reader to check off the names of those who turn them in. Now I read some of the papers. I find I can tell whether I am getting my points across. I can also tell what problems students are having. I clarify difficult points next time we meet. I can identify students in trouble early in the term. If a student gives me off-the-wall responses, I invite him/her to come see me. One of the

common problems is that a student has the course prerequisites on paper, but not in his/her head. Furthermore the 'minute paper' process causes students to listen more actively. All the way along during the class session they are saying to themselves, 'Is this the most significant think I'm going to learn today!' Toward the end of the hour they have to wonder, 'Well, what question is uppermost in my mind at the end of this session.' Students' writing improves. Responses I get in the last week of the term are more articulate, and longer than those at the beginning."

7. Touch base repeatedly with the fundamentals or basics.

"Students like to be challenged, but they need to feel confident and well-prepared to meet the new challenges, and that often means consciously retreating a little to reinforce the foundations on which new material is based," according to an outstanding lecturer in Education.

One Engineering professor believes that too much of science and engineering is presented to students in a rote, plug-in-the numbers way.

"There are thousands of formulae," he points out, "but all of these are variations on a limited number of basic ideas or theories." "These basic ideas are 'ideal theories' from which are derived all the 'approximate' or 'technical theories' which engineers use."

"I try to teach my students how to judge when they can use an approximate theory with confidence and when they are obliged to go to a more rigorous level. In this way, I keep touching base with the fundamentals to reinforce students' understanding of them."

Another Engineering teacher concurs. "Students typically are presented with 100 different equations in each course they take. They are exposed to 1100-1200 equations overall. Rote memorization is futile; no one can remember that many equations. You have to point out over and over again that these 1200 equations are all embedded in about 8 basic ones."

8. Stress the most enduring values or truths in your discipline.

"I stress the permanent values in literature, the emotional responses that a particular novel or collection of novels elicits from us all," says one professor of English. "I try to get my students to understand why they respond to a given novel the way they do."

After a class has discussed how they feel about a novel - the common emotions it arouses - he tries to lead them to analyze, understand, and explain why nearly everyone feels the way they do. He poses questions such as: What must literature be like in order to get us to respond the way we do? Why does a particular novel effect everyone in the same way? "Behind all my questions is the search for a way of analyzing and discussing literature that will explain the most with the fewest assumptions."

9. Confound yourself, and let your students "rescue" you occasionally.

Asking open-ended questions which the students can sense are mystifying to you personally is a great way to encourage relevant discussion and to model your enthusiasm for discovering the secrets of the subject.

A distinguished lecturer in Education reports that "When I ask myself a question that initially seems puzzling to all of us, it lets my students know that I'm not omniscient, and that it's all right to ask questions or get confused occasionally. The class really responds to that."

10. Get to know your students: Where they are "at"; and what they relate to.

Knowing your students is important for a number of reasons. Several outstanding lecturers stressed that new learning must begin from what students are already familiar with. "Otherwise they quickly become confused, disinterested or anxious," a lecturer in Education explains.

A Physics lecturer noted that students will work harder to solve a problem that appears to be relevant to them. Rather than restricting problems and issues to assignment questions, she delivers many of her lectures around puzzles and quandaries.

One lecturer who successfully engages students this way warns that it is important, even when deliberately trying to be provocative, or "realistic", to choose topics that the students are "ready" to deal with in the context of the material being covered.

Getting to know what gets the class "fired up", or what they relate to is a strategy that several lecturers have recommended. This requires establishing good rapport and making time to chat with students in non-teaching situations (see packet 5 for ideas concerning "Individual Rapport").

11. Encourage your students to form small study groups and send representatives to see you about difficulties their groups are having.

One Humanities teacher who does this says, "Although I encourage my students to come see me about problems they are having with my course, first year students are often loathe to do that. By encouraging them to form study groups, I am trying to help them get to know at least some of their fellow students and to take advantage of what they can learn from one another. Also, it seems to be easier for some students to come to me for assistance if they 'represent' a group, because the problems are then seen as common to many students not just the group's representative. Faculty members can be very intimidating for some first years, even those of us who try very hard not to be. Also, many of these students were at the top of their high school classes and it is difficult for them to adjust to the competition at university. While it is difficult for them to admit that they don't understand something, there is a certain comfort in knowing that some of their fellow students are in the same boat and that by joining forces they can help one another."

12. Schedule an individual appointment with each student.

An outstanding lecturer in Education stressed the importance of knowing and treating students as people, rather than simply as students. "This is central to making the material relevant, opening up discussion, and generally meeting their learning needs," she explained.

A Statistical professor felt that he was not being successful in generating class discussion. At the end of the third week, still unable to encourage class participation, he decided to pass around a sheet of paper with a list of 10 minute blocks of time when he would be available for individual appointments.

Each of his students was required to sign up for one of the 10 minute appointments. They were told that the chief purpose was for him to get to know his students better and to listen to any complaints or suggestions they might have.

"I found that this was a real ice-breaker," he explains. "Even though most of our discussions were mainly chit-chat, some of my students used the opportunity to indicate problems they were having in the course or to make suggestions about course improvements. Perhaps the chief benefit was that it gave me an opportunity to get to know my students. As a result, they seemed to feel more comfortable asking and answering questions in class.

13. "Open with gusto" and "Finish strong."

Professor Otis Lancaster of the University of Pennsylvania points out the advantages of giving special thought to beginning and ending each lecture.

"The opening should secure students' attention and give them the desired mental set. Get off to a good start. Do something to command attention from the outset. Put punch into your opening.

"Have some form of attention-getter.....a gadget or piece of hardware whose operation depends upon the principles of the day's lesson usually excites attention. Carefully planned questions or statements can also develop the curiosity necessary to get students' attention.

"Action is always an attention-getter. If you intend to use charts or models for demonstration, have these carried to the front of the class after students are assembled; or keep charts covered until class starts. This will usually whet students' curiosity and make them eager to see what is going to happen.

"The ending is as important as the beginning. Don't let a class session fade into nonexistence. Make an impressive ending. For example, end with: a question for the class to cogitate and answer before next meeting; a quotation conveying the essential theme; a summary; a miniature review (keep it brief); or what to do before the next class." (Lancaster, Otis E., Effective Teaching and Learning, N.Y.: Gordon and Breach, 1974, pp. 122-24).

Giving students a strong sense of having achieved something worthwhile or useful by the end of a session has been recommended by several outstanding lecturers as an effective way to end a lesson and motivate students.

14. 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."

15. Pose paradoxes for your students to solve.

A Chemistry professor emphasises conceptual understanding by challenging his students with apparent paradoxes. "Several times each semester," he says, "I set up a demonstration to give a visual result that is at variance with what is described in the textbook. My students are then helped to explain the paradox by applying a variety of problem solving techniques."

"This kind of demonstration really gets my students thinking," he says. "Furthermore, many of my students tell me that they learn more from seeing than from reading. It gives them another way of understanding and helps them gain self-confidence that they do in fact understand."

16. Model processes of deductive or inductive reasoning by which an explanation becomes apparent.

A professor of English says, "nearly all of my lectures follow a logic and discovery procedure." That is, 'Let's make assumption A and then see if B follows from that.' My lectures take the form of *unravelling* this process, with questions posed to my students to check the validity of the analysis".

A professor of Architecture says that because he has an abiding interest in questions of cause and effect, his lectures tend to take the form of "What could happen if..." Problem-solving approaches are characteristic of many excellent teachers.

An Engineering teacher, for example, begins his lectures by posing a problem which he proceeds to work out on the blackboard, labelling each step and explaining his reasoning to the class as he works. "I try to model a style of analytic thinking which I hope my students will emulate," he explains.

As noted elsewhere, it is possible to model not only appropriate problem-solving strategies, but also an enthusiasm and respect for the value or importance of the material being taught.

17. Incorporate student activities which develop 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.

18. 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.

19. Indicate the relative importance of ideas presented in your lecture.

A professor of Political Science says, "I highlight major points by saying, 'This is more important than that.' For example, if I am giving a list of six contributing factors to some phenomenon or event, I deliberately identify which in my view are most important. I don't want students to go away thinking that everything I say is of equal weight or importance."

A professor of Engineering also thinks it is important to differentiate between the most and least important ideas presented in a lecture. Therefore, he tells his students, "You don't have to memorise everything, but you might want to remember this..." or "This, on the other hand, is something you will use so many times that it's worth paying special attention to." Used sparingly, he believes that these prefatory remarks help focus student learning on the most essential parts of the course.

20. Explain or demonstrate to students why a particular point is important.

Several teachers believe that the best way to cue their students to the importance of an idea is to show them the role that idea plays in an overall understanding of the course material or in applications beyond the course.

"I think it is crucial for students to know why a concept is important," says one Physiology professor. "Just saying that it is important is not enough. You need to put the concept in some perspective, to show why it is important. Explaining why an idea is important not only gets your students' attention, it gives them a framework on which to hang the idea."

An Engineering professor concurs. "I follow the introduction of a major concept with lots of specific examples, including anecdotes which show application of the concept in current professional practice," he explains. "You must show your students why it is important to know a particular concept if you expect them to master it."

21. Reserve the last 10 minutes of your class for questions.

A faculty member in the humanities wanted to provide an opportunity for student questions during his lectures, but he was concerned that the questions might monopolise class time and take them off the topic. "I decided to reserve the last ten minutes of class for student questions," he says. "I feel better knowing I will not be interrupted. My students feel better knowing they have an opportunity to clarify points they may not have understood."

22. Call on your students to paraphrase or summarise what you have just said.

"Asking your students if they understand gets you only so far," one History teacher explains. "Asking Ms. Jones to summarise the main things to remember about X, and then asking other students to help out if she is having difficulty is a far better check on your students' understanding."

Asking questions of specific students has other benefits too. For example, because your students know that they may be called upon, they listen more attentively for the main ideas and that in turn helps them to organise their notes better. Getting your students to summarise periodically also breaks the monotony of a 50-minute lecture.

23. Attend or lead lab or discussion groups yourself.

Several faculty members report that they always lead one lab or discussion group themselves so that they have firsthand knowledge of how the course is going.

"My students vary considerably in their command of prerequisite subject matter in this course," one faculty member explains. It's a tough course and the chief task is to find out as soon as possible who is going to have trouble and to give them help early on. I can't always depend on the tutors to let me know. Also the atmosphere in the biological sciences is so fiercely competitive, many of my students try to hide their weaknesses until it is too late for me to help them.

24. Create opportunities for role-playing.

An Engineering professor makes use of role playing to encourage his students to develop skills they will need in their careers. "I give my students copies of an Engineering report, for example. Then one half of the class is asked to assume the role of the authors of that report and prepare an oral presentation for the client or funding agency. The other half of the class is assigned to act as representatives of the client or funding agency and to prepare questions to be asked of the engineers.

"About a week later, during class time, I select certain students to actually enact these roles in front of the class. My students do not know ahead of time who will be called upon, so everyone has to be prepared. Those not called on join me in the role of the observer. When the students have enacted the meeting, the rest of us give a critique of each side's performance."

25. Assign provocative or controversial topics for papers.

"I find that the quality of the papers I get often depends on the quality of the assignment I give," says a professor of Business Administration. He tries to give provocative topics as paper assignments. For example, in a recent assignment he asked his students to respond to the question, "If you were working in a company that illegally pollutes the environment what would you do and why?" Giving provocative assignments not only challenges his students and makes for more interesting reading but also diminishes the chance that the papers will be plagiarised.

One lecturer who successfully engages students this way warns that it is important, even when deliberately trying to be provocative, or "realistic", to choose topics that the students are "ready" to deal with in the context of the material being covered.

The importance of getting to know what gets the class "fired up" and what they relate to, is emphasised by several lecturers in setting appropriately provocative assignments.

26. Ask students to analyze an essay or journal article and to write a critique of it.

One professor of English assigns the work of a literary critic and then asks his students to write an essay taking an adversary position. "If my assignments are provocative," he says, "I get better results. I stress the importance of their presenting a personal point of view. They should enjoy doing the paper; it should provide them with a personal learning experience."

A Psychology professor asks his students to write an evaluation or critique of a paper by a professional psychologist. "The process of analysis and evaluation captures what I am trying to do in the course," he explains.

27. Have your students keep a journal of their learning experiences during the course.

A journal can be a very effective way to facilitate students' reflection on their own learning during a course, leading to greater understanding and appreciation of the subject. It is important, however, to ensure that students have been familiarised with the process of journal writing and the benefits they can expect from it.

This may be required as an assessable project, or simply recommended as effective preparation for class discussions, presentations, or exams (particularly if the exam is designated as "open-journal" rather than "open-book", as one lecturer suggests).

28. Give assignments which put your students in the role of another.

A History professor reports that she used to give rather standard writing assignments, e.g., "compare author X and Y's views on A," where the two authors tended to be professional historians. "Most undergraduates, however, find the arguments of current historians somewhat arcane," she says.

"Therefore, most recently I have asked my students to read a collection of the 18th century speeches on why Louis XVI should be killed and assigned them the task of writing their own speech as if they had been living during the French Revolution.

"Undergraduates really are enthusiastic about this kind of assignment and do an incredibly good job. It helps them to identify with the issues of the time; in fact many of my students went to great lengths to research the authenticity of their own empathic interpretations. Next year, I intend to take this assignment a step further by dividing my students into small groups and having them actually deliver their speeches to the group."

29. Assign "thought problems" which are typical of the problems faced by professionals in the field.

A Forestry professor assigns weekly "thought problems" which are of the same type of questions professional foresters are asked, such as, 'What is killing that tree?'; not 'Name six factors which can kill trees.'

Using real-life problems to encourage thoughtful reflection and/or discussion in this way, rather than requiring solutions in the form of assessable assignments, can be a particularly useful way to avoid overwhelming students with the complexities inherent in such tasks.

30. Use real problems and have your students solve them.

An Engineering professor presents his students with problems based on real cases. "For example," he says, "my students are told that a ball bearing failure has occurred in an airplane. They are asked to outline what steps they would take in determining the cause and correcting it."

"They tell me what tests they would make and, using simulation techniques, I tell them what the results of those tests would be and ask what they would do next. This continues until my students have either solved the problem or are stumped. Then their results are compared with those from the actual case study.

"The value of this approach is to give my students experience solving the type of practical problems they will encounter as professionals," he explains. "Also, because the problems are based on actual cases, it gives my students a chance to compare their own problem-solving skills with those of practicing engineers."

31. Use case studies to give your students practice at answering practice questions.

A professor of Anthropology carefully prepares case study assignments to give her lower division students exposure to primary research techniques and strategies. Students are presented with a collection of photos, maps, and narrative information which depict a site as an archaeologist would see it. Students must answer a series of questions, e.g., "What changes in eating habits can you infer from the artifacts found at two different levels?"

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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