

ICE

INSTRUCTOR / COURSE
EVALUATION
TIPS

IMPROVING ACADEMIC TEACHING

ICE Factor 1

**Learning &
Academic Value**



Improving Academic Teaching

Learning and Academic Value

The following suggestions for enhancing teaching and learning are keyed to sections of the Instructor/Course Evaluation (ICE), an instrument adopted for the evaluation of teaching at Saint Mary's University and based on the Students' Evaluation of Educational Quality (SEEQ). The ICE factors teaching into nine components, eight of which provide formative information that can be used to improve teaching and learning.

The following suggestions were adapted by Professor Herbert W. Marsh, University of Western Sydney - Macarthur, Australia (developer of the SEEQ) with permission from: Davis, B. G., Wood, L., & Wilson, R. (1983). ABC's of Teaching with Excellence. Teaching Innovation and Evaluation Services, University of California. Minor changes in language were made by Professor Beverly Cameron (University Teaching Services, University of Manitoba) to fit the Canadian context. Teaching Tips is reprinted with permission.

Current resources related to the eight formative ICE factors are available from the Office of Instructional Development, Saint Mary's University. Copies of the ICE questionnaire are available from the Senate Office.

Learning and Academic Value (ICE Factor 1): In essence this factor denotes students' subjective feelings of success gained by participation in a course and/or at the hands of a particular teacher. Students who are challenged and stimulated, who consider their learning throughout 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 with challenging learning tasks.

Improving Academic Teaching

Learning and Academic Value

The following ideas and suggestions have been used by outstanding university instructors.

1. Give your students a conceptual framework on which to hang major ideas and the factual information of a course.

The framework may be a structure, a theme, a conceptual typology, a controversial issue, or a theory. The conceptual framework should be made salient to 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 minimize 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 conceptual linkages for 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 lectures, discussions and assignments to reinforce student understanding.

2. Pose paradoxes for your students to solve.

A Chemistry professor emphasizes conceptual understanding by challenging his students with apparent paradoxes. “Several times each semester 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 students thinking. Furthermore, many 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.”

3. Divide your course into levels of conceptual difficulty.

A Zoology professor focuses the first part of the 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. In this segment I eliminate many ‘nice to know’ concepts in favour of going over the basics in a very thorough way.”

“Because 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 later 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 understanding of the subject); and those which are “Optional” (i.e., need to be mastered by those students with special interest in the subject).

4. Stress the most enduring values of 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?’ and ‘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.”

5. Touch base repeatedly with the fundamentals or basics.

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, 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 instructor concurs. “Students are typically 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.”

6. 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 unraveling 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 lectures by posing a problem which he proceeds to work out on the blackboard, labeling 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.”

7. 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 issues 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, 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.

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

“I began to emphasize 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 emphasize 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 students having to guess what is important if I can tell them.”

9. 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 students, “You don’t have to memorize 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.

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

Several teachers believe that the best way to cue 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 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. You must show your students why it is important to know a particular concept if you expect them to master it.”

11. Assign “minute papers” at the end of some lectures.

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 teaching assistant to check off the names of those who turn them in. When I read the papers, 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 thing 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.”

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

A faculty member in the Humanities wanted to provide opportunity for student questions during lectures, but was concerned that the questions might monopolize class time and take them off the topic. “I decided to reserve the last ten minutes of class for student questions. 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.”

13. Call on your students to paraphrase or summarize what you have just said.

“Asking your students if they understand gets you only so far,” one History teacher explains. “Asking Ms. Jones to summarize 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 students know that they may be called upon, they listen more attentively for the main ideas and that in turn helps them to organize their notes better. Getting students to summarize periodically also breaks the monotony of a 50 minute lecture.

14. Attend or lead lab or discussion groups yourself.

Several faculty 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 teaching assistants 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.”

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

One Humanities professor who does this says, “Although I encourage 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 year students, 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."

16. Schedule an individual appointment with each student.

A Statistics 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 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 chi-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.

17. Create opportunities for role playing.

An Engineering professor makes use of role playing to encourage 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."

18. 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 students and makes for more interesting reading, it also diminishes the chance that the papers will be plagiarized.

19. 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 students to write an essay taking an adversary position. “If my assignments are provocative, 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 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.

20. 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 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 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 students into small groups and having them actually deliver their speeches to the group.”

21. Assign “thought problems” which are typical of the problems faced by professionals in the field.

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

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

An Engineering professor presents 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 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 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 students a chance to compare their own problem-solving skills with those of practicing engineers.”

23. Use case studies to give 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?”

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