

# ICE

INSTRUCTOR / COURSE  
EVALUATION  
TIPS

**IMPROVING ACADEMIC TEACHING**

*ICE Factor 3*  
**Organization &  
Clarity**





## Improving Academic Teaching

# Organization & Clarity

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.*

**Organization and Clarity (ICE Factor 3):** The essential ingredients in this factor are structure and clarity. By cueing learners about the organization of subject matter, by providing advance organizers, by scheduling student exercises and assignments appropriately and by helping learners make appropriate connections between concepts and ideas, teachers assist students to remember information and form linkages between new material and material they've previously learned. These principles of teaching and learning are time-honoured and widely accepted elements of information processing theories of learning. While clarity is clearly an expected outcome of careful preparation and good organization, it is also correlated with teacher knowledge of the subject, and with teacher uncertainty producing vagueness which inhibits student understanding. Students who perceive instruction to be well organized and clear are, thus, likely to enjoy enhanced knowledge and understanding of course material. The ICE Organization and Clarity factor is pertinent to several widely accepted principles of teaching and learning

## Improving Academic Teaching

# Organization & Clarity

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

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

A faculty member in the Sciences noticed that he had taught a course better the first time than the second time. “When I asked myself why, I realized 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 colour-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, I review them carefully, asking myself: ‘What might 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. Carefully define 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.” This professor 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.

### 3. 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.”

#### **4. 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 maximize 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, 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.

#### **5. 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.”

#### **6. Acknowledge the difficulty of concepts students are likely to find hard to understand.**

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.”

## **7. Demonstrate a concept rather than simply describing it.**

Whenever possible, try to avoid talking about something in its absence,” one instructor 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 visualize 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.

## **8. Prepare a detailed course syllabus.**

“My syllabus usually runs about 15 pages,” says a professor of Education. “It is organized by class session and each section consists of a major topic, and 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 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, 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 organizes my thinking. I think it helps students feel more organized, too.”

## **9. Keep 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.

## **10. Completely rework 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 and I think this 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.

## **11. 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 labeling them as he lectures to help students in their note-taking.

## **12. 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 finishes his lecture notes. “I always check my lecture notes against the text a final time to be sure that I am complementing rather than repeating the text and to note any disagreements I have with its author.”

## **13. Audit the same or related courses taught by colleague’s.**

One faculty member in 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.”

## **14. 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 maximize 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. For example, I might make a note saying ‘Don’t forget to emphasize this point before that point.’ Executing these suggestions to myself the very next semester reinforces my own learning.”

## **15. 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.” The professor prepares this way because, “Students like structure, 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.”

**16. 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 specialized 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.”

**17. 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.

**18. 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.”

**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. Write the objectives for a class on the board before you begin.**

“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.”

## **21. 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.” “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 summarize the major points at the end of the hour.”

## **22. 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 coloured 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 emphasizes the importance of major ideas better because they are revealed in the context of the discussion.”

**23. Use “closed lists” whenever possible in your lectures.**

A Political Science teacher says he makes frequent use of “closed lists” that let students know how many points or ideas he plans to or has covered. “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.”

**24. 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 “tai chi” break, leading them through exercises.

**25. 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 students a conceptual framework and guide so they can identify where we are and where we are going in the overall discussion.

“I realize 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.”

**26. Organize 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 (a lecture) 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....” (From “The Art of Talking about Science,” Science, Vol. 154, December, 1966).

**27. 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 summarize 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.”

### **28. 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 realize and acknowledge if they have any problems,” as one teacher puts it. A variation on this technique is to summarize and call for questions whenever there is a major transition from one topic to another within the same lecture.

### **29. Use the blackboards to help you summarize.**

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 organized and 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 coloured chalk important concepts and steps.”

### **30. 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

my students having to guess what is important if I can tell them.”

### **31. 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 students, “The main point is…” but she said it 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.”



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