

Classroom



In this section of *Resonance*, we invite readers to pose questions likely to be raised in a classroom situation. We may suggest strategies for dealing with them, or invite responses, or both. “Classroom” is equally a forum for raising broader issues and sharing personal experiences and viewpoints on matters related to teaching and learning science.

In Defence of the Lecture

“I think that teaching is the highest level of intellectual activity, more than discovery in the lab. To be able to tailor the story to reach the people, that’s the greatest challenge.”

Ira Herskowitz (Geneticist, 1946–2003)

When it comes to teaching, everyone is an expert, so why not me? Any amount of experience, large or small, guarantees that one will hold strong views. I am no exception. In the course of over 50 years, perhaps 20,000 students have had to listen to me, the majority of whom I probably bored, a few whom I may have stimulated. I have no formal training in pedagogy. With these dubious credentials, let me make a single point: Lectures are a vital aspect of university teaching.

Why hold such an old-fashioned view when education is being significantly reworked to incorporate extensive technological developments? To begin with, learning involves two distinct elements: acquiring information and reaching understanding. The distinction between them has been sharpened in the computer age which is superbly equipped to provide information but ill-suited for interpreting knowledge. There are good reasons why

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this is called the Age of Information rather than the Age of Understanding.

How to foster understanding? I believe that lectures are well cut out for this task. The good lecturer fulfills several unique roles: integrating the material, pointing to its relevance, defining the boundaries of what is expected of the students, exciting students by revealing personal experiences and feelings about the subject matter at hand. In other words, the lecturer is a live body that can interact as a human being, answer questions, help to resolve individual difficulties, and be part of a shared exploration. A good lecture constitutes an event, however fleeting, in the life of the student.

Lectures need to build conceptual frameworks on which facts can be hung. The nature of the framework may vary with the subject matter, but should include the following points:

a) How does the material relate to the students' previous store of information? Learning does not arise *de novo* but is based on prior knowledge. All too often, the teacher assumes that the students know nothing about the topic of the lecture. This is untrue and dangerous. It reveals that the lecturer has not thought about his/her students and their background.

b) What is the key point to be learned, the "take home lesson"? This *raison d'être* for the lecture needs to be stated explicitly.

How does lecturing relate to the rest of teaching? There are three aspects to teaching: what is taught, how it is taught, and how the teaching is evaluated. If any one of these is over- or under-emphasized, the effort will fail, just like a three-legged stool whose one leg is too long or too short. Is this always recognized? Hardly. To put it glibly, the faculty is mainly concerned with what to teach, students with the examinations. With highly notable exceptions, little attention is paid to the teaching process.

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This brings me to what works well in the classroom. Here are some obvious points about good lecturers:



- Inevitably, they are excited about lecturing and take pride in their work.
- They utilize the available tools (e.g., slides, OHP, and blackboard accessories).
- They have the purpose and the outline of the lecture uppermost in their mind.
- Above all, they engage the students in any of a number of personal ways (e.g., asking questions, describing their experience, conjuring up interesting scenarios, sharing the challenge).

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There is little point in listing the attributes of poor lecturers; they are innumerable. Not infrequently, they are just tedium from the podium. A mediocre lecture is unsatisfying not only to the audience, but especially to the lecturer. He or she may walk away from it bemused and may tend to blame the victims (the students). I include some of the myths that lead to poor lecturing:

- The more information, the better.
- If I don't tell them, they'll never know.
- It worked for me, so it will work for them.
- If they don't learn, it's because they are lazy.

Rarely, if ever, is someone born a good lecturer. Most university lecturers are literally thrown into a classroom with no guidance and no experience (other than having been students themselves). Given that nearly everyone needs help, where can one turn to improve their lecturing skills? Videotaping and viewing a lecture can be useful. The help of colleagues is essential, especially for beginners. A sympathetic and experienced colleague who sits in on a lecture can provide useful comments and needed encouragement, and, most importantly, can help infuse a sense of pride in lecturing well.

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How are the lectures connected to the examinations? Assessing



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student progress serves two functions: to establish that students have passed the course and, along the way, to affect their methods of studying. The first point is relatively easy to deal with, the second more demanding. Yet both are crucial. I do not think one can clearly evaluate the student's understanding by using multiple choice questions alone. Although some believe that such tests can be structured to require 'problem solving' skills, this point is debatable. Presently, even the simplest 'fill in' or short-answer essay question tests in a less contrived manner than the most sophisticated multiple choice question.

Please note that I am not belittling the use of new technology in education. I am all for it when deployed with selectivity and care. Some sophisticated and thoroughly evaluated applications may be useful and allow to stretch scarce financial resources. But let us keep in mind that cost effectiveness must be measured in terms of what one is seeking to achieve. Let us be mindful of what technology is good for and where and when it is a poor substitute for live teaching. To repeat myself, technology imparts information much better than it does understanding.

I am not sure that I have stated anything very original and ask to be forgiven by those who have thought about such matters with greater intensity and success. But it is my fond hope that, novel or not, these few words will help retain a venerable and time-proven activity – giving a lecture.

