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Being an Effective Teacher

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These are some notes on being an effective teacher. They are adapted from a speech, which may explain the tone. The first part deals with purposes, the second part with techniques. The focus is on classroom teaching; of course, much effective teaching takes place in other venues--in one-on-one discussions, in commenting on student papers, in the laboratory, and in similar places. The focus also is on teaching undergraduates not already committed to academic careers.

An essential insight for me was that I was not responsible for telling the students everything I knew. I was not even responsible for knowing everything that they might ask me. I was not important to them because of what I knew. They could find out themselves what they needed–if they wanted to. The important thing a teacher can do is to make learning significant and possible. We should focus on making students want to learn and trust them to do the rest.

We are good teachers, I believe, when we show that our subject is challenging, significant, accessible–when we show that learning is worth doing. We are also good teachers when we show that other facets of life are worthwhile–concern for others, integrity, spiritual life, and a conviction to act on one's belief.

Being a parent gave me much insight into what is important in teaching–what did I want my own children to become? What should I want for other people's children? I would certainly like them to be intelligent and I would not want them to be ignorant of the arts and of science. I would like them to be responsible citizens and lead a moral life but most of all I want them to be confident and curious–to want to learn, to believe they can learn, to be eager to do new things, to lead a full

life. Nothing has happened to a student while in college unless this sense of what is possible has taken hold and a teacher, better than any other mechanism I know, can nurture this sense. I tell my seniors that if they do not feel good about their ability to meet new challenges they have wasted 4 years and $200,000.

Students do deserve clear and organized classroom presentations. A scholarly aspect of our profession is just that–to organize and interpret the subject, to make student learning more efficient and effective by pointing out fruitful approaches, to show what has worked in the past and what has not. As someone said, those who do not know history are doomed to repeat it. It is our duty to make the student's learning process as efficient as possible.

The dilemma in classroom presentations is that clarity and organization can be unexciting. A teacher does not have to be an entertainer but he or she must be able to sustain interest. The Hippocratic oath admonishes: "First, do no harm." Harm is done when the student's mind wanders, when the student stops caring. Many adults, including those in academe, are conditioned to endure long and tedious expositions to unsurprising conclusions. Most of our students are not so conditioned.

Now for techniques. New ideas need to be connected to what has come before but, more importantly, to the "real world", to the student's experience. We are not pandering to students in showing how an idea plays out in practice. I am sorry to say the excitement a faculty member may experience in discovering or explaining a new piece of knowledge is less important to most students than the relevance of the knowledge to their lives.

Something different than talking to a class is often effective at engaging students. Props, short videos, working out spread sheets in real time can restore interest part way through a lecture–when the novelty of the idea du jour has worn off. When I teach engineering I try hard to have a simple demonstration every day and pass things around the class for students to hold. If nothing else is accomplished they will feel more comfortable when they meet the device again after graduation.

Basing a classroom session on questioning is, of course, a well-known technique for gaining participation. Even in large lectures one can pose questions and, if one is courageous, wait until a student volunteers an answer; one can always succumb to answering the question if one loses the game of "chicken". One gets more questions if one responds tactfully to undesired answers; one technique is to write only helpful responses on the board. I find "cold-calling" too threatening to be useful but I may be in the minority here. It seldom hurts to ask the question "What is really going on here?"

In large classes one can use techniques besides questioning to encourage involvement; voting is one–when I bring up what seems an important question I ask for a vote and insist that all participate: "everybody has to have an opinion on this". My lecture outline handouts have blanks where the student is expected to do something–complete an argument or a calculation.

I move around the lecture room, coming up to a student in, say, the fifth row and soliciting an opinion from her or him. If all else fails in a dull part of a class one can make a minor blunder, an algebraic mistake, for example, and let the class discover it. I try to find excuses to shake hands with students during class because a grade school teacher told me touching is reassuring.

Someone else told me the only thing really clear from studies of how people learn complex material is that they tend to remember what they discover for themselves. So I try to structure presentations so students can discover the results for themselves and in the process gain confidence. After all, I won't always be there to help.

How would I, as a student, want to be treated? As a partner in the educational enterprise. It does help to learn names in a big class. Moving away from the lectern or the blackboard tends to reduce the psychological distance. Giving handouts personally to students creates an opportunity to greet them individually. As a symbolic gesture I often ask the class to decide on some administrative procedures, such as what day the assignments will be due. My own style is to try to find a way to praise every student every day but others may not find that comfortable. At the very least, the student should be made to feel welcome in the classroom. It is illuminating to hear students comment on the quality of individual teachers; graduate students tend to reward brilliance, undergraduates tend to reward support and empathy.

Another aspect of making the student a partner is to be willing to adjust the presentation in real time, to sense what the students are thinking and address their situation. Transparencies, an overhead projector, and copious use of a marker facilitate flexibility; Power Points do not. (An often-heard diagnosis for the Challenger disaster is widespread use of Power Point presentations at NASA.)

So how does a teacher do harm? By lowering the student's self esteem so he or she feels the material can never be mastered. By not involving the student in the exercise. By not demonstrating that learning is satisfying and worthwhile. By not making the material clear and absorbing. By acting as if he or she does not care to teach.