CONTEMPLATIONS AFTER FORTY YEARS OF TEACHING

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The other day I ran into my good old friend David Bloomquist. He told me during our curb-side chat that is now the director of the "University Center for Excellence in Teaching". Eventually, after having shown me his spacious office, he handed me a coffee mug and an executive ballpoint pen, both with the insignia of the Center. Then, after having "bribed" me this way, Dave asked me to please write a contribution for his newsletter "The Pedagogator" because he knew that I had been graced so far with 12 teaching awards (among them the university-wide teacher of the year, the Florida Blue Key teaching award, several college of engineering awards, and the TIP award-twice). Dave felt that I surely had a few words to say about my past experiences that would be of help to new professors. Further, he suggested that I could possibly comment on some of the new teaching methods that are currently discussed and occasionally even implemented. I am glad to comply with his request even though I have to admit that I practice no spectacular new techniques. But my students like what I have been doing as expressed in numerous enthusiastic teacher evaluations. What I do is simply the following:

1) I prepare at least one hour per period for classes which I have given before and about 5-7 hours for each new class. This preparation allows me to teach without reading from or referring to notes.

2) I arrive in the classroom at the right time, or even a few minutes earlier to have the chance to chat with my students or answer any questions they may have.

3) I start my class with a one or two minute review of the previous lecture.

4) I am a great supporter of the old fashioned blackboard. The larger it is, the better. I write as much as possible on this board, and highlight important parts with colored chalk and/or put a box around important equations. (I do not like so much the new whiteboards because one has to always remember to cap the markers before they dry out. And those markers available in the lecture room often do not work anyway, so you have to bring your own.

5) I start at the upper, left-hand corner of the blackboard. I do not erase anything during the entire hour. At the end of the lecture I have reached the lower, right-hand corner of the blackboard. Admittedly, this takes some advanced planning and practice, but can be eventually accomplished by everybody.

6) I attempt to write large and legibly enough so that my "hieroglyphics" can be read from the last row. After class I often walk to the back of the lecture room to see if I succeeded in doing so.

7) During the last three minutes of the lecture I repeat briefly what was discussed that day by showing with a pointer the relevant graphs or equations on the board and mention how they were arrived at. This lets the students see the larger context in which the individual steps have been developed.

8) I attempt not to block the blackboard with my body so that virtually everybody can see what is written on the board; at least most of the time. This is accomplished by stepping aside after writing.

9) When drawing a graph on the board, I carefully label the axes by saying what they represent and describe a curve while drawing it. If there is more than one curve in a given graph, I distinguish them with different colors and write on each curve what parameters they represent.

10) To each class I bring a bunch of "show-and-tell" items, such as a transformer, a computer chip, a computer hard drive, a laser tube, a silicon crystal, several magnets, a transistor, a shape memory alloy etc., so that students have hands-on experience of the subjects I am talking about. Occasionally, I show movies that depict manufacturing processes of what was explained before in theory.

11) I encourage questions during class and answer them in a respectful manner (even the supposedly 'stupid questions'). If I do not know the answer immediately, I admit so (which makes a student feel good) and promise to answer it next time.

12) I feel that overloading the students with information during class does not serve them properly. Often less information, but that in more depth, is pedagogically better. After all, the students can learn supplemental information from their textbooks.

13) I am a supporter of the Monday/Wednesday/Friday rhythm rather than the two or three hour-long lecture on one day. Students need digestion between lectures and catching up with their homework.

14) I try to speak loud and distinctly so that everybody should be able to hear and understand me. I aim my voice toward the last student row. Foreign students particularly appreciate this.

15) I address my students by looking at them during the lecture, that is, I keep eye contact. This way I can see if some students drift away, requiring me to change the pace.

16) I take a class picture during one of the first lectures and ask the students to write their names next to their image. This gives me the chance to memorize their names and to address them with their names during lectures and in my office. (I admit memorizing names becomes increasingly difficult with age).

17) Students like my "war stories," that is, practical examples in which the subjects just taught have been used (or not been used with negative consequences). This loosens up the flow of information and demonstrates the relevance of the often theoretical-appearing subjects. In other words, a proper balance between theory and practical aspects needs to be maintained.

18) I am not a friend of projected transparencies because they are frequently removed before the students are capable of fully comprehending what they want to teach. Still, occasionally even I use overhead projectors when putting the respective information on the board would require too much time or when the students have the same graph in their textbook and I need to point out certain details on the image. Flashing slides in five second intervals on a screen turns students quickly away from paying attention. In other words, each transparency needs to stay on the screen long enough so that all details they contain can be fully explained and understood. On the same line, I am not a friend of PowerPoint presentations in the classroom. They have their merit in seminars and conferences where a substantial amount of information needs to be transmitted in a relatively short time.

19) Before an exam, I hand out tests from previous years, whose answers we discuss in the class immediately before the upcoming midterm or final.

20) I allow my students to prepare for the test a one-page, hand-written, personal "crib sheet" on which they may write all the equations and graphs they consider to be important. They have to turn-in this sheet along with their tests. This promotes academic honesty and gives those students some confidence who otherwise "draw a complete blank" during tests. Interestingly enough, most students admit that once they have written a crib sheet they don't need it any more during the test since they are now well prepared for the exam and they feel confident that they can turn to their sheet when need arises. Needless to say, my tests do not allow mere regurgitation of crammed information, but usually require some thinking. For this reason, my exams are often labeled as "difficult", ("because asking a student to think is unfair").

21) Most of all, however, I consider my students to be my friends. I am kind to them and am available most of the time for questions and for airing concerns. My door is virtually always open. I teach all classes myself, I write the tests and grade them myself and use teaching assistants only for looking over the homework, which I assign, (because one can only learn by "doing" and not so much by just listening). As a former student once wrote in retrospect: "Dr. Hummel does not only teach class, he adopts it."

In summary, I love teaching and showing my enthusiasm about the subject matter. This spark flies over to my students and makes them enthusiastic too.

These points may sound, for some readers, old-fashioned. So be it. But why should we abandon techniques that have been proven to be successful over many decades? I feel that we should use whatever produces the best educational results. For some instructors, the impersonal PowerPoint presentation, etc., works. For others it is the personally addressed, spoken word that reaches the minds and souls of the students.

Most importantly however: It is often said that classroom teaching at university does not help a professor in obtaining tenure and promotion. What really counts is research money and publications. Those colleagues and administrators who think like this should keep in mind that the future of or nation depends strongly on what and how we are educating the younger generation.

Having this in mind, I strongly feel that proper, compassionate and enthusiastic teaching (in the classroom and the research lab) is the most important mission of a university.