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What Makes a Good Teacher? Lessons from Teaching Medical Students

[INSTITUTIONAL ISSUES: COMMENTARIES]

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Medical educators responsible for faculty development often frame teaching as a set of skills. But there is more to teaching than a checklist of skills. What is this "more"? Below are my answers to that question, based on my experience teaching—and learning—with medical students.

A good teacher wants to be a good teacher. Teaching has to be its own reward. While recognition for outstanding teaching is commendable, faculty who are motivated only by formal honors will not achieve teaching excellence. Faculty need to work as hard at teaching as they do at research or clinical practice.

The focus of instruction should always be on student learning, not faculty teaching. Too often faculty members concentrate on what they want students to know. However, medical education is professional education, and we who teach medical students should go beyond our conceptions of what we think they should know and instead should search for what they actually need to know as practicing physicians. In this regard, I have often gently chided my basic science colleagues when they lament about not understanding what medical students need to know. My solution: I urge them to visit hospitals and clinics to see what medical students and residents do related to my

colleagues' disciplines. Many of the changes I have made in my own teaching have been due to insights from watching and talking to clerkship students and residents.

When instruction is focused on the accumulation of factual knowledge, learning is quickly extinguished (usually after the corresponding test), but when teaching aims at a higher level of cognition, what is learned is organized and remembered in useful ways. This is consistent with what the cognitive psychologists call "constructing knowledge." Learning is seen not as the storage of information but as the continuous process of filtering new knowledge through the structures we have developed from prior learning and experience. For example, when I am teaching evidence-based medicine (EBM), I do not ask students to memorize the hundreds of different biases that can threaten the internal validity of a study. Rather, students think about what valid research in medicine is, discuss new occurrences of bias that they encounter in reading the medical literature, and consequently develop an enriched view of bias that will allow them to more effectively critique the medical literature.

Good teachers do not talk as much as their less effective colleagues do. This is because good teachers involve the learners—asking questions, framing cases to solve, forming small groups for discussion, asking for the views of learners, pausing to allow students to think. When they do talk, good teachers use words efficiently. They make concepts and principles simple and clear; they give concrete examples to illustrate abstract points. Further, the skilled teacher adapts *while* teaching and reflects *after* having taught.

While it is necessary for a teacher to be highly knowledgeable in his or her discipline, it is perhaps more important to show enthusiasm and interest in teaching that discipline. This excitement for learning is demonstrated by being a well-organized and expressive lecturer who presents information concisely, by involving students in problem solving, and by showing how the discipline relates to real life practice.

The good teacher also shows interest and enthusiasm by attending to all aspects of effective instruction. The course syllabus is complete yet efficiently organized and easy to follow. Students have ready access to the teacher, who is eager to help with students' concerns. Evaluation of students' knowledge and skills is done in reliable, valid, and fair ways. It is apparent to students that good teachers solicit and use feedback from learners to improve instruction. In the aforementioned EBM course, written suggestions are solicited at midcourse. Meritorious improvements are added to suggestions that have accumulated through less formal methods by midcourse. Students are told in written and oral communication about second-half course changes based on their comments. Those sound recommendations for which there can be no immediate response are deferred to the next iteration of the course. At that time, students are given a brief summary of course improvements resulting from the prior course evaluation.

Good teachers are always thinking about ways to improve what and how students learn. They are always working on solutions to questions such as How can I give students more control over their learning? How can I encourage collaboration among students? How can I provide timely and effective feedback? How can I accommodate learners at various levels of sophistication? (Regarding this last point, in my EBM course, students with backgrounds in research, statistics,

and epidemiology are mixed with those who are frightened of anything quantitative.)

Furthermore, good teachers think aloud with their students about problems. In discussing EBM, I might ask: How do we balance objective evidence with other elements of medical care—financial costs, patient preferences, ethical standards, etc.?

Learning complex concepts and principles and incorporating them into one's structure of knowledge require time, both to think and to practice application. For instance, students in my EBM course are asked periodically to expand their understanding of the fundamental research designs used in medicine—randomized controlled trials, cohort studies, etc. First, the students learn the characteristics of each research design and how to distinguish one from another. In the following weeks the students learn the strengths and weaknesses of each design and how a design is chosen to match the researcher's question. Finally, the students learn how research designs are a vital component in assessing the validity of therapy, diagnosis, prognosis, and causation studies.

Good teachers create an atmosphere where students are motivated by the intrinsic rather than the extrinsic (e.g., passing the next exam, getting a high grade). In education, intrinsic motivation refers to an interest in learning because one cares about the discipline, wants to improve his or her skills, and appreciates that what is being learned can be applied to practice in real life. As practitioners in our fields we who teach are motivated by intrinsic goals—but how can we transmit this to our students?

First, we must assure that the extrinsic is not the focus by anticipating students' needs and expectations. The syllabus must be a thorough but clear and concise guide to students' learning. Examinations and other evaluations must match learning objectives and be reliable and valid. Grading must be fair.

Second, the good teacher creates an environment where curiosity is encouraged, problems related to the discipline solved, and knowledge applied to real-world situations. We who teach should always be able to answer the "so-what" question. I invite students to interrupt at any time to ask, "What is the purpose of learning that?" If I do not have a convincing answer anchored in the practice of medicine, I think about reframing the concept or eliminating it. For example, in EBM, every concept should be a part of the mosaic of improved medical practice, and EBM skills should be used to solve both individual patient and population-based clinical dilemmas. Preclinical students can work through patient cases dealing with common medical problems familiar to the general public (e.g., smoking cessation, cancer prevention) while clerkship and more advanced students can answer clinical questions related to their assigned patients.

Third, the intrinsic triumphs over the extrinsic when we as teachers manifest the best qualities in human relations—openness, respect, trust, a sense of humor. In sum, students are motivated for intrinsic reasons when (1) the course of instruction is well planned, transparent, and fair, (2) the relationship between learning and real life is clear, and (3) they see that their teachers care about their disciplines and their students.

To sum up: When colleagues ask me what the most important principles of good teaching are,

I say: Be enthusiastic about your teaching and interested in the well-being of your students, prepare well for your teaching, teach knowledge in the context of solving authentic medical problems, and always be thinking about and working on the improvement of your teaching and your students' learning.

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