

Lessons Learned
J. Kevin Dorsey, M.D., Ph.D.
Southern Illinois University
School of Medicine

I have always been intrigued by the phrase “the practice of medicine.” During my medical training it became obvious that skills improved with practice. Repetition and experience are powerful teachers, whether aspirating fluid from a knee joint or making decisions about clinical care. Practice clearly enhances performance—“the practice of medicine” makes excellent sense in retrospect.

What puzzles me, however, is why we don’t easily extend that notion to other kinds of training. Why don’t we, for instance, talk about the practice of teaching or the practice of education? Especially at the college level, where educational methods courses are almost never a prerequisite for teaching, we seem to believe that knowledge of an area qualifies us to be teachers of that subject. Even more curious is the often unstated assumption that having someone talk in front of a group means that something was learned by those who listened. A worse assumption is that a student who doesn’t do well either did not study or is a ‘poor student.’ The teacher seems left out of the equation.

Medical training seems to be the ideal venue for a teacher. If the word doctor is derived from the Latin *docere*—to teach— this implies that the therapeutic relationship between patient and doctor is intrinsically one that involves both teaching and learning. It is a bidirectional, iterative process. Although medical knowledge is all about science, the skill of medicine is wrapped up in the physician's ability to effectively and empathetically communicate the meaning of that science to patients, medical students, and other learners—that is, to teach.

My initial forays into teaching were driven by need and convenience: Someone was needed to teach a course; I was available and needed the extra money. In general, my teaching at the time consisted of repackaging textbook chapters into "biochemistry made simple" lectures. I talked; they listened. Students took tests; I graded them. I was a teacher of science. It was at around this time that the SIU School of Medicine's founding dean, Richard Moy, M.D., set out to hire a faculty who would teach "what medical students needed to know to practice medicine.” As a new assistant professor, I was forced to consider what my students *really* needed to know, as opposed to jumping right in and making them "mini-biochemists"—the last thing that most physicians in training thought they needed to become. And they were right.

What follows are some personal lessons learned. They are anecdotes rather than scientific studies, and my only hope is that they resonate with your experience or encourage you to continue practicing education.

Students: Their Point of View

Some of us are fortunate to do what we enjoy and, even better, to think we do it well. While giving a series of lectures, I couldn't help but notice the attentive student sitting in the front row, C. G., a 22-year-old woman who had been on the Dean’s list each semester throughout her

college career. As she hung on my every word, her growing interest in what I was saying confirmed that I had made the right career choice; she was a lecturer's dream. After the lecture she sought me out to clarify some of the challenging points. It was then that I learned that she was slowly going deaf, and it helped if she could see me speak the words. What needed clarifying were those parts of the lecture that had been delivered with my back to the class as I faced the screen.

"See one, do one, teach one" is a saying familiar to medical students, and it is the paradigm by which most procedures are often learned. (Competency-based education is relatively new to medical schools.) Percussion as part of the physical examination of the lungs is a skill that most medical students acquire after a brief demonstration and a little practice. Unfortunately A.M., my freshman medical student with cerebral palsy, would never master this physical exam skill no matter how much he practiced. His spasticity was mild but noticeable, and the required hand coordination was absent from birth. But if he tapped over the lung fields on the patient's back with a reflex hammer instead of a finger, the appropriate sounds were elicited every time. The day I figured that out, I knew I was a teacher. One size may not fit all.

But in general, students are young and healthy, so when I lectured to a class about patients and their afflictions, I usually did not think about their individual medical histories. After a lecture on child abuse to a class of less than one hundred, R. B. came to my office asking to talk. He was a quiet but popular young man with greater than average athletic ability. After sitting in silence, tears welled in his eyes, and he began to tell me his story of abuse. I felt terrible that I had opened an old wound yet gratified that he could confide in me. After that I became mindful that someone in the audience may have a personal connection with the topic to be discussed.

FACULTY: Their Perspective

In college I majored in chemistry, enjoying organic while suffering through physical chemistry and quantum mechanics. Biochemistry was taught by an excitable man in his 50s who always wore a white lab coat and smoked a pipe. (It was the 1960s.) It was clear that he loved talking biochemistry, especially to someone who seemed to also have a fondness for the subject. He eagerly wrote letters of recommendation for me and enthusiastically encouraged me to apply to some premier programs. I was worried that I would get in over my head, but if he was so confident, who was I to argue?

About 15 years later a similar event occurred as I applied for a medical residency. The chairman of the Internal Medicine department, a veteran of several institutions, tried to allay the insecurity I felt as a graduate of a new, untested school. He also wrote letters of recommendation for me and guided me toward competitive residency programs I believed were out of my reach. Teachers have experience with many students, but as students, we have experience only with ourselves. Their objective assessment may seem unique to a student, but it's a common interaction.

The teachers I liked the best were the ones who made me want to learn. They didn't go out of their way to be friendly. They set standards, had high expectations, and seemed fair. For me, this combination engendered respect. But the one thing that made me an admirer was the genuine ability to treat me like a colleague, or at least a co-learner. One such person was Dr. P., a

respected neurosurgeon who always seemed to know as much pharmacology as he did neuroanatomy. On one particular day, it was unclear why an ICU patient was comatose—the patient who, on the previous day, had spent considerable time telling me his story. Dr. P. asked me what I thought—not as an exercise on rounds—but because he wanted to consider all opinions. He made me feel worthwhile, as if I had something to contribute. What a confidence builder!

FACULTY: Hiding in Plain Sight

Much has been made recently of the "hidden curriculum" in medical education. (Hafferty & Franks, 1994). This term was coined to describe concepts unintentionally learned in an educational setting. Having been at the same institution for decades, first as a faculty member, then as a student, and, finally, as the Dean, I have had many opportunities to discover what the hidden curriculum includes. Much as we would like to think, for example, that our clever exposition of a difficult concept would be long remembered, I have learned from attending class reunions each year that this generally is not the case. Instead, the memorable teaching moments retold by former students are often things I was not consciously trying to teach, but nevertheless seemed to have been powerfully remembered.

There may be value in trying to make the hidden curriculum more manifest. In my current role, I survey the graduating seniors every year and ask them which members of the faculty they found to be the most professional and who they found lacking in professionalism. The comments are illuminating. Although I have only done this for the past few years, I wonder if either the "most or least professional" faculty will be memorable when these same students return at a future date. I wish I could discern a pattern so that the key ingredient could be added to those concepts we want to be memorable; that would be a powerful teaching tool.

Feedback on performance, constructively given, can improve performance and reduce error (Ericsson, 2007). We have all seen course evaluations, many with descriptive statements that students rate on a Likert scale from "strongly agree" to "strongly disagree," "always" versus "never," "excellent" to "poor," and so on. The numbers generated by these evaluations are useful for comparison purposes, but for me the real benefit comes from the comments section. This part of the feedback is neither quantitative nor subject to statistical analysis, but it is the part that provides information I can use to improve my approach. And the most useful comments are the negative ones, telling me that I didn't do as good a job as I thought. As painful as some of those comments can be, at least they can be reviewed in the solitude of my office. Acting on feedback is an opportunity to show that you care—and that you have learned.

A New Way of Teaching and Learning

Before standardized patients (Barrows, 1993) became commonplace in the "preclinical curriculum," the usual way to discuss a patient case with a class of students was for the physician teacher to retell a condensed and edited version of the patient's story. This could be punctuated by questions such as "What do you think is going on?" or "What else would you like to know?" but the discovery element was minimal. The same was true for physical findings: Rashes were described, heart sounds interpreted, and cranial nerve abnormalities stated—even if a student had never looked or had failed to recognize the problem. Similarly, lab results and imaging studies

were either given to the class for their (collective) interpretation, or the lecturer could ask the class what they would like to know. I was aware of the power of problem-based learning from Barrows' work (Barrows & Tamblyn, 1980; Norman & Schmidt, 1992; Albanese & Mitchell, 1993) and wanted each individual to develop a deliberate rationale for asking questions, doing the logical parts of the physical examination, ordering the appropriate tests, and interpreting the findings told in the history, observed on physical examination, and discovered in the lab results. At around this time, the first Macintosh computers appeared making it fairly easy to establish a standardized searchable database. We could create a "patient on a disk" who could be examined by dozens of students simultaneously. Individual students could discover on their own and then order tests based on their problem solving logic.

Working with Hurley Myers we translated Barrows' Problem Based Learning Modules (Distlehorst & Barrows, 1982) to the computer and added heart sounds, photos, x-rays, and anything else we could digitize (<http://www.dxrclinician.com>). The result was a much more realistic approach to a patient case—one that could be "worked up" by a single student. And the technology allowed us to track a student's "footprints" and know where they had been, thereby inferring their reasoning (Delzell, Chumley, Webb, Chakrabarti, & Relan, 2009). The rich discussions triggered by problem solving rather than the recitation of predigested information easily convinced me that this method of learning was more powerful than a talking head in front of a classroom.

Having migrated from stand-up lecturer to small group tutor, I learned that the adage about judging a book by its cover applied to the tutor group as well. In a lecture, interaction with individual students is minimal, and it is difficult to predict who will perform best on a knowledge test. Opinions regarding "good" or "poor" students therefore tend to be formed after the fact. As a small group tutor, on the other hand, student characteristics are more open for inspection. Even if some students are reluctant participants, a skilled tutor can encourage their participation. The student who appears fluent in medical jargon by virtue of prior training as a lab technician may "look good at a distance" but on further probing can be found to have only superficial knowledge. A quiet group member, on the other hand, may be seen as ignorant or uncertain, but drawing him out in tutor group can show that he may be knowledgeable. Make no mistake, just as it takes skill and practice to deliver a lecture well, the skills required to be a small group tutor must be acquired with lots of practice and reflection on the process. But the focus is fundamentally different—less on teacher as performer and more on student as learner.

Epilog

Last year I attended my high school reunion—the first one ever for me. I was looking forward to seeing classmates who by now had either retired or were getting ready to do so. My senior year English teacher, a much beloved priest now in his 90s, was there and I was looking forward to reconnecting. His hair had whitened and he was thinner than I remembered. Someone mentioned that he was not at all pleased by having to move into a less independent residence. His stride lacked the confidence I had seen when I was a teenager, but he got around without difficulty. After I reintroduced myself to him, he responded quickly, "Now, what did you teach me?" I did not expect him to remember me but I was caught off guard by his question. I had anticipated the usual banter that would connect us at a common point in time. He was a veteran of these reunions and surely had engaged long forgotten students before. I was disappointed that he

seemed to have lost the quick wit I had respected fifty years ago. But, in reality, he had not missed a beat. In the final analysis, teaching is really about learning. A recent qualitative study of the effect of teaching on the skills of teachers demonstrated the “profound positive impact” perceived by those who taught. (Wenrich, et al., 2011) No matter what the venue, be it classroom, lab, office, or at the bedside, teaching is an emotional and intellectual connection between two people that has a lasting impact on both. Knowledge is necessary, but not sufficient, for the practice of teaching. The good news, for both those of us who teach and our students, is that every new class is an opportunity to put into practice what has been learned from previous classes. Maybe someday we will get it right.

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