
SPECIAL ARTICLE

Good Teachers Talk About Teaching

The American Association of Colleges of Pharmacy's practice of publicly recognizing those individuals honored at their schools for teaching excellence was the inspiration of this collection. Pharmacy faculty members whose names appeared on the 1990 AACP list were contacted by letter and offered an opportunity to share their thoughts on teaching. By design, very little guidance was given the teachers about the subject matter or length of their responses. The variation that resulted is probably a reflection of the diversity that these individuals bring to the classroom. The one common thread is dedication to and excellence in pharmacy teaching. For want of a better scheme, the manuscripts are presented alphabetically by author.

James David Adams, Jr.
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REMARKS

While I was a graduate student at the University of California-San Francisco, Anthony Trevor delivered pharmacology lectures that were well received by the students. His lectures were delivered with enthusiasm and covered a large amount of material. But he always let the students know what information was important to learn. He also never thought so seriously about himself that he could not enjoy himself with the students. These are qualities that I have made an effort to incorporate into my teaching. I teach third-year students in an integrated course where my lectures deal with the pharmacokinetics and drug metabolism of specific pharmacological classes of drugs. I enjoy teaching and interacting with the students. It is not uncommon for a joke to appear in my lectures, usually about half way through the hour.

Just as all the faculty at the USC School of Pharmacy, I prepare detailed handouts for each lecture. My lectures always cover more information than I expect the students to remember. I make an effort in each lecture to discuss with the students exactly what I expect them to think about and what not to bother memorizing. When the students study for my examinations, I give a study session where we discuss how to study. Perhaps the most significantly different aspect of my teaching style is that students must not memorize information, unless specified. In fact, those students who spend large amounts of time memorizing useless information, such as half lives and volumes of distribution, do poorly on my examinations. Instead, they must think about each drug covered and decide what they should know about that drug. The guidelines I give them for this process are simple: think about drug interactions, active metabolites, and other factors—such as clinical status—that could be disastrous for a patient receiving each drug. I stress these topics because they are obviously important and will be directly relevant to the students' upcoming clinical experience. The students must dis-

cover for themselves, from all the information and clinical examples I give them, what is important. Of course, during lectures I give them ample hints about what I think might be important for them to know. My test questions are entirely clinical: a patient with the following condition was given the following drug therapy; why did the following consequences ensue? These multiple-choice questions are not easy for the students, many of whom struggle with them. But, after a while, they usually catch on to my style. Then the examinations become less of a struggle.

Students are always a part of my lectures and not only because of the questions they ask. I start each lecture with the same question. Does anyone have a personal experience with this class of drugs to share with us? Not infrequently, I have an experience of my own or of an acquaintance to share with them. For instance, my father nearly died when a physician prescribed and a pharmacist supplied both coumarin and phenylbutazone to him.

My teaching style is difficult for some students to understand at first because on one hand I discuss very serious matters, and on the other hand my style is light and even joking. Usually, they get the message that I am serious about the topics I teach but that I enjoy teaching.

*Kenneth A. Bachmann
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OF ZOMBIES AND PHARMACOLOGY

Introduction

As a recent recipient of an outstanding teaching award at the University of Toledo College of Pharmacy, I wish I could offer some valuable comment on what makes one a good educator. I do have some ideas along those lines; however, I am not at all sure that

recognition for good teaching during any one year qualifies one to advise others about the elements of good teaching. Instead of passing along pearls of wisdom to other pharmacy educators from whom I probably could stand to learn a great deal, I will provide interested readers (if any remain at this point) with the general structure and rationale underlying my first two or three lectures in our pharmacology sequence.

It is my responsibility to introduce our first professional year students to the discipline of pharmacology. It is a subject I have loved ever since my own undergraduate days in pharmacy at Ohio State University, and it is a subject I want our students to love as well. My natural bias is that it continues to be the backbone of the discipline of pharmacy, and understanding and appreciating it are crucial to the successful practice of pharmacy. I want students to be as enthusiastic about their study of pharmacology as I am. I take my role as the pharmacologist who first introduces students to the discipline very seriously, and I view it as my challenge to stimulate their interest in pharmacology.

Defining Pharmacology

The first three lectures in the class are used to define the field, to describe the specialties (hence the types of research in which pharmacologists engage), and to provoke students to want to learn more about some of the specialties. In this introductory course, pharmacology is defined in the broadest terms possible. Specifically, I define it as the study of the interaction between chemicals and living systems. That gives me plenty of latitude (or is it license?) to include drug metabolism (because the vector for the interaction can allow for living systems to process chemicals as well as for the chemicals to perturb the systems), drug disposition, pharmacokinetics, and toxicology as specialty areas of pharmacology. The two terms *chemical* and *living system* require further amplification. Our students do, of course, know what chemicals are, although they may not have come to grips with the thought that drugs, too, are chemicals. This is a good place in the curriculum to make them face up to that notion. Toxic substances are chemicals as well. So the distinction between drugs and toxic substances, from a pharmaco-

gist's perspective, can simply be made on the basis of outcomes. The purposeful mixing of drugs with living systems is done with the intent that some beneficial or therapeutic outcome will be realized. However, even if those objectives are met, they may be met with a simultaneous penalty of some adverse effects. This notion is explained in greater detail when the concepts of receptor heterogeneity and crossover are discussed. So even within the definition of pharmacology, the groundwork for discussing the concept of a therapeutic index is laid. Toxic substances are those chemicals whose interactions with living systems are uniformly viewed as likely to lead to adverse outcomes. Also, toxicity is in the eye of the beholder. Obviously, the relatively benign antibiotic penicillin is most often thought to be a drug with beneficial effects. Not so from the point of view of the susceptible bacteria, to which penicillin is a decidedly toxic substance. In any case, the definition of pharmacology omits reference to humans not only because it permits latitude in defining specialties of pharmacology, but also because it allows the inclusion of all those drugs that are not targeted at mammalian cells at all, but at parasites. I have been told that some pharmacology departments have happily relinquished instruction in antimicrobial drugs to other departments on the basis that antimicrobial drugs are not aimed at human cells. I have no idea whether any pharmacology departments have really done that or not. But if this is true, my definition of pharmacology should permit all pharmacology departments to reclaim curricular hold of instruction in antimicrobial agents because antimicrobial drugs most certainly are chemicals that interact with living systems, and their use can clearly have adverse consequences for the human host, making their toxicology of immense importance and interest.

Pharmacology Specialties

I suppose I also take some latitude in giving examples of living systems, since I include cellular macromolecules (enzymes, proteins, DNA, and receptors). From my examples of living systems, one can pretty easily begin to deduce the kinds of pharmacology specialty areas that have evolved. For example, who other than molecular pharmacologists would be most interested in studying the

chemical nature of interactions between drugs and receptors? At the other extreme of the continuum, I consider societies as living systems. That opens the door to describing the very interesting areas of pharmacoepidemiology and ethnopharmacology. Pharmacoepidemiologists may not study chemical effects on whole societies, but they do look at outcomes in large cohorts of defined patient groups. A discussion of pharmacoepidemiology also permits me to discuss new approaches to evaluating drug effects: namely, retrospective review and quality of life assessments. Both use measurement techniques that are pretty much foreign to most other areas in pharmacology. Incidentally, the existence of pharmacology specialty areas can be verified by spending a few minutes in the library. It is axiomatic that the establishment of well-defined disciplines will give birth to new scientific journals. I encourage our students to spend time in the library looking for as many journals as they can find that have the word *pharmacology* in the title if they really want proof of the existence of specialty areas.

In any case, I have the most fun (and I think the students do as well) with the concept of ethnopharmacology, which I define as the study of the interaction between chemicals and society. Think of what this can encompass. Here are just a few examples:

1. The use of government-mandated chemical birth control (who said pharmacology is limited to the United States?)
2. The impact of new drug development on the quality of life
3. Chemical warfare
4. Societal consequences of substance abuse (yes, we might even discuss the war against drugs in our pharmacology course)
5. The cultural use of drugs in isolated societies.

The Pharmacology of Zombiism

Actually, about one and one-half lecture periods are given to Item 5 above. It is interesting to contemplate that the cultural use of drugs in isolated societies, and the study thereof, has led to important therapeutic agents. The obvious example is tubocurarine. Cocaine would be an accurate example, although maybe not an ideal example. There are, to be sure, plenty of examples of drug use in other societies that have led to important therapeutic developments

for modern Western medicine; ephedrine from China and reserpine from India are two examples. However, the use of these substances was medicinal rather than cultural.

The example of the cultural (nonmedicinal) use of chemicals in an isolated society that I use in class is discussed in the context of the pharmacology of zombiism. This topic allows me to acquaint our students with the scientific literature. They are given as a reading assignment a paper by E. Wade Davis published in the *Journal of Ethnopharmacology* (1983;9:85-104). The paper is entitled "The Ethnobiology of the Haitian Zombi." Davis, an ethnobiologist, can also be labeled as an ethnopharmacologist. His paper is fascinating. Indeed, his research on Haitian zombiism was the basis several years ago for a popular movie, "The Serpent and the Rainbow." We talk about the societal context in which zombiism is practiced, but mostly we talk about the drugs that are used to create and sustain the zombi state, especially tetrodotoxin. Our students, I think, are interested to learn that there really are zombies and, more importantly, that they appear to be pharmacological creations. Several years ago, after *Time* did a piece on Davis's research with the title "Zombies: Do They Exist?" Geraldo Rivera (while working for ABC on 20/20) investigated and reported on Davis's work and on Haitian zombiism. How we all enjoy viewing that tape! But once we get past the hype and hyperbole, the Rivera piece does have an extremely good minute or two that speculates on possible therapeutic uses of tetrodotoxin and so reinforces a major premise of ethnopharmacology: that the study of drug use in isolated cultures may lead to the development of drugs that will be therapeutically useful in modern medicine. Incidentally, we also get to talk about the pharmacological effects of eating sushi once we have discussed the pharmacology of tetrodotoxin.

Now, Davis's work has been subjected to some criticism (see *Science* 1988;240:274-6). Most of the criticism centers around his failure to report experiments with tetrodotoxin that failed to produce measurable behavioral changes in experimental animals. The issue of dose in relationship to response arises here, even well before we formally discuss dose-response concepts. One of Davis's responses to such criticism is that zombi pharmacology works in Haiti because of the operant religious and cultural (psychosocial) mind-set. That

psychosocial mind-set cannot, of course, be reproduced in animal models and maybe not in humans who are not native Haitians, either. Simply stated, it seems as though a psychosocial setting can influence the position of a dose-response curve. Anyway, oblique reference to both dose-response curves and placebo effects can be made here. So I have made it a point to discuss these criticisms, since it opens the door to discussions about how science is done, the concepts of reproducibility and scientific disagreement, and what makes good science and bad science.

To me, the flow of material for introducing pharmacology seems fairly natural. Begin with a definition of pharmacology and related terms, define the areas of research, and then pick one area to emphasize as an example. My objective in selecting and emphasizing ethnopharmacology in general, and the pharmacology of zombiism in particular, is to give pharmacologically naive students a single example of how interesting pharmacology can be and thereby whet the appetites of my students for more pharmacology. My own bias is, of course, that this approach is helpful in sustaining interest in topics such as receptor theory, dose-response concepts, drug disposition, pharmacokinetics, and the other topics that occupy the next 9-10 lectures of the introductory lectures in pharmacology.

Don R. Davis

Technical Director and Instructor in Pharmaceutics

College of Pharmacy

University of Tennessee

REMARKS

Teaching has been and is my number one priority at the University of Tennessee College of Pharmacy. There are other priorities to be met also, as we all understand. Sharing knowledge with the students during a lecture session in such a way that knowledge may be envisioned as practical application in a laboratory session or related

to their future as pharmacists is my determined goal each time I share with that group of future pharmacists. To stir responses from the students during lecture or laboratory sessions and observe their growth in vocabulary and practical applications, to see students become enlightened pharmacy students and then become outstanding pharmacists — all this taking place throughout the years in which we guide them . . . Well, what can I say? I am sure you have felt this also: an inner warmth, an exhilaration toward an entire class, pride in being part of their quality education and professional program.

To me, as an educator, the words sharing, caring, dedication, quality, and sacrifices are not mere words; they have deep-rooted meanings.

Who was the best teacher I had? This would refer to the St. Louis College of Pharmacy, which is my alma mater. I would say all of my professors and instructors worked together in a team effort. The one who helped mold me and influenced me to the greatest extent to become a professionally thinking student of pharmacy was Dr. J. R. "Bob" McCowan. Through his guidance and teaching, I was able to understand and to mature into a pharmacist. Working with him in various research projects whetted my appetite for further research and teaching.

At the University of Tennessee Department of Pharmaceutics, my colleagues are a continual inspiration, especially Drs. Sheth and Avis. It takes total team effort.

Please allow me to conclude these remarks with a quotation from a speech (Kiwanis District Convention 1972): "To touch the past is to touch a rock. To touch the present is to touch a rose. But in order to touch the future, you must first touch a life." This quotation has been an inspiration for my life and one that I would share with you.

Peter H. Doukas
Professor of Medicinal Chemistry and Molecular Pharmacology
School of Pharmacy
Temple University

REMARKS

Receipt of the best teacher award from the students of the Temple University School of Pharmacy is indeed an honor. It implies that this diverse group of hardworking people senses a quality worthy of recognition. If this quality exists, it derives from values imparted by others during my development. I gratefully acknowledge this award and am pleased to share the seeds of its origin.

An honest reflection on my own experience would reveal the good fortune of having been exposed to a number of excellent educators and mentors. My earliest memory in this regard is that of Mrs. Porter (those formative training years are characterized by people whose first names remain a mystery) and Mrs. Mavropoulou, women of my grandmothers' age. Both ran private schools, the former a retired New York City public school teacher, the latter a woman of Greek letters who taught the evening Greek School of the Church of Sts. Constantine and Helen in Brooklyn. Both were tireless and relentless in their repetition of fundamentals, trying to establish foundations in young minds liquid with distraction. Mrs. Porter sat a group of us around her dining room table four hours a day, five days a week and drilled us incessantly on our ABC's, spelling, and math tables. She was gentle but firm, generous in her praise of our accomplishments and instructive when our failures surfaced. Mrs. Mavropoulou's task was to instruct the children of Greek Americans in the intricacies of the Greek language, its grammar, meaning, and metaphor. She was driven to instill in us the essence of our roots, to prevent their dissolution in the melting pot. We sat in hard-backed chairs while she sternly admonished our attempts to resist the nuances of meaning, constantly laboring to tune our thinking to the subtlety of the language. I must admit that at the time I did not appreciate their efforts; in later years, however, I began to recognize their contribution to my development. Their discipline, which exercised the mind, was a counterpoint to the loving

indulgence bestowed upon the first grandson by grandmothers whose cooking and baking sustained the body.

Erasmus Hall High School in Brooklyn in the late 1950s was considered one of the best schools in the borough. Two teachers who remain in my mind's eye because of their obvious dedication in the face of teenage rebellion are Mrs. Silbershire and Mrs. Denman. The former instructed us in geometry and trigonometry, literally throwing herself at the blackboard, covered in chalk dust as she taught us the logic of solving problems. She lectured as though all of us were sitting in the back row, projecting her voice until it filled every corner. It was as if she needed to involve all of her intellectual and physical faculties in this process of transformation. Mrs. Denman, on the other hand, was soft-spoken as she coaxed us into reading English literature. Hers was an unenviable task, the sharing of an aesthetic sensibility with a gang of Flatbush ruffians. She did not falter in the face of resistance, confident of the value of her subject.

The faculty of the School of Pharmacy at St. John's University in Queens, New York, presented a coherent, tightly knit program. They were a small but imposing group of educators and practitioners. Dr. Henry Eisen, Professor of Pharmacy, was my first role model as a university educator. He was direct, thorough, and exquisitely critical as he organized our pharmaceutical thoughts during senior year. His lectures were tightly structured and punctuated with a dry humor; he never failed to answer a question. Dr. Vincent de Paul Lynch, Professor of Pharmacology, and Professor Anthony J. Monte-Bove shared their humor as well as their knowledge. The students were always welcome in their laboratories and offices. At the graduate level, Drs. David Dalton and Langley Spurlock of the Department of Chemistry at Temple University left strong impressions. Their lectures in synthetic chemistry, heterocycles, natural products, and reaction mechanisms were virtuoso performances of academic dedication. To this day, I consider David Dalton the quintessence of the professor, an individual totally committed to the pursuit of knowledge through elegant research and to the sharing of that knowledge through superb lecture presentation. His lectures engage the student as an active participant in an unfolding constellation of synthetic pathways, electron cascades, and structural trans-

formations—logic as applied to molecular modification. Neither Dalton nor Spurlock ever hesitated to take the time to thoroughly explain a difficult point, often recruiting the strained imagination of the student in the process. One had the sense that they were totally immersed in the activity at hand. At the postdoctoral level, Dr. Joachim Seydel of the Borstel Research Institute in Germany and Dr. E. J. Ariens of the University of Nijmegen, the Netherlands, provided the environment to ask uncomplicated questions in the pursuit of research goals. They welcomed the neophyte into their company as a colleague and gave of their time and knowledge without hesitation. They gently corrected misinterpretations of data, free of professorial pretense. The sparkle of inquisitiveness was always evident as daily results inspired future experiments.

The continued development of an individual requires access to nurturing paradigms with elders as guides. Thus, in the present, I am fortunate to have as both friends and collaborators two elder statesmen of the Department of Pharmacology at Temple University's School of Medicine, Drs. Leon Salganicoff and John J. O'Neill. Both are accomplished researchers and well respected in their particular fields of study. Both have extended themselves to invite the collaboration of younger faculty colleagues. In the process, they have helped to create intellectual and personal bonds that promote creativity, growth, and broader frames of reference. They are compassionate sounding boards at times of stress and critical observers when the occasion requires.

All of the aforementioned individuals have helped to shape a particular vision of education, essentially through formal mechanisms. That formality, however, did not impede the expression of their own particular humanity in the process. Formal education helps to articulate and shape fundamental qualities. These latter qualities are latently inherent in all people and are awakened by example. These particular examples are usually provided by other "teachers," individuals whose lives are deeply interwoven with ours. Thus, acknowledgment is due to those who have helped to shape the ground substance of our being. In my own case, my father demonstrated the meaning of sacrifice, pride, and independence in meeting commitments. He kept me in school at a time when my desire for it wavered, and I am thankful for his efforts. My good friend Nick

Andreolas has shared the experience of his 80 years and has taught me the meaning of honor and generosity. Lastly, I have learned true courage from my son Michael whose victory over a near-fatal infection has taken ten years of incredible struggle. He has taught me to assess periodically my own position on a relative scale of human experience.

On a certain level, each of us is the focal point of innumerable dialectical transactions between ourselves and a variety of other individuals. In a sense, we are the embodiment of an ongoing synthesis, a shifting mosaic of being within a personal matrix of human abilities, flaws, contradictions, proclivities, yearnings, etc. We are shaped by our experience and by other people, either out of imperatives, design, or accident. We are, in our life's trajectory, both student and teacher. Those of us who have chosen teaching as a profession bring to this activity our cumulative human experience as well as the formal training of our specialty. It is this blend of formal study and personal evolution that molds our presence in the classroom and creates the maestro at the front of the lecture hall.

*Glenn H. Eberhart
Professor and Associate Dean
School of Pharmacy
University of Missouri-Kansas City*

REMARKS

I have been blessed with many good teachers and a few terrible ones. I learned something from all of them. The ones I remember the most were those who cared about me as a person, believed in what they were doing, were knowledgeable in their subject, and presented the information well.

It could have been Mr. Keables in my high school advanced literature course. I still have the image of a drop of sweat hanging tenaciously to the tip of his nose as he read Carl Sandburg's "Chi-

cago." I also remember how pleased I was when his picture appeared on the cover of *Life* as that magazine's outstanding teacher selection.

Then there was my chemistry professor at the University of Denver, showing us how difficult it is to smash an atom by having all of us throw chalk at a piece of paper with a hole cut in it. Creativity, participation, warmth, and encouragement are the feelings I get when I think of this man.

Graduate school at the University of California-San Francisco was filled with outstanding role models for teaching: Jack DeGroot for histology, Harold Harper and Vic Rodwell for biochemistry, William Ganong for physiology, Jerry Jorgenson for medicinal chemistry. I owe a lot to Fred Meyers, who said, "Stick to what you can do best." Alan Burkhalter and Bert Katzung always had well-organized, well-presented lectures. Vee Sutherland critiqued my lab presentations, and I have patterned my lectures and syllabi after her presentations. I cannot forget gaining humanistic qualities and understanding from Jack Miller at the University of Minnesota during my two years of postdoctoral training. Finally, Larry Weaver, who was the Dean of the School of Pharmacy at Minnesota, admonished me to keep in touch with the practice of pharmacy.

As I think of this parade of outstanding individuals, I can reflect on how fortunate I am to have been exposed to their positive attitudes, sense of humor, organization, caring attitude, fairness, openness, and so much more.

Joe E. Haberle
Professor of Pharmaceutics
St. Louis College of Pharmacy

REMARKS

My best teacher in college was Dr. Glen J. Sperandio at the Purdue University School of Pharmacy and Pharmacal Sciences. He could take simple information and make it interesting and exciting. As my major professor, he gave me the encouragement I needed to successfully finish graduate school. He was always available for consultation when special problems needed solutions. I became interested in teaching when I served as a laboratory instructor in Dr. Sperandio's undergraduate courses. I found much satisfaction in working with the students then, and I continue to enjoy this relationship today.

I take a firm approach to teaching. I also believe that teaching goes beyond the classroom and the laboratory. I try to make myself available to the students as much as possible. I do not always have the answer that is being sought, but I have found that just taking time to listen, to give the student an opportunity to give voice to a dilemma, is what helps. A sense of humor is equally helpful. A good laugh can clear away a lot of tension.

In my position as Director of Student Development, my goal is to make the students aware of the many facets of our profession. The next step is to help them select the position that best suits them. I stress job satisfaction and the total package each position offers. This does not always include the position with the highest salary.

My approach to teaching and to working with young people is neither complex nor original. However, this simple formula seems to work for me: when students know you care, good things seem to happen!

B. W. Hadzija
Associate Professor
School of Pharmacy
University of North Carolina

SOME THOUGHTS ABOUT COLLEGE TEACHING

When in class, in front of a large number of young, highly motivated and able people, the teachers should perform well. Many succeed in this endeavor.

The literature on college teaching is full of definitions and discussions on what makes an instructor a good teacher. Many of these are valid and useful, but many are repetitions of known facts.

The primary quality of good teachers is undoubtedly their performance in classrooms: knowledge of the material, preparedness, clarity of presentation, ability to introduce new concepts, and ability to make any difficult topic easy to understand. However, teaching—in my view—goes far beyond classrooms, far beyond the bare presentation of topics in classes. It encompasses the interaction of teachers with students on a one-to-one basis (or in small groups), including not only academic discussions but those of a personal nature, discussions of everyday events occurring in a student's life, his or her problems, a student's plans for the future, and much more. Teaching includes recognizing students outside classrooms: in hallways, in streets—wherever one meets them. Among the factors that will have an effect on teachers' quality of presentation and behavior, two of the least frequently mentioned are mastery of topics and confidence arising from experience. The question is, how do we build up experience in the briefest time possible? This, in my opinion, can be achieved with the help of senior colleagues. One of the most important assets for a novice in college teaching is the input, help, and criticism of experienced peers. I shall never forget when I started with my college teaching career and requested my colleagues to sit in on classes to assess my presentations. Not very many of the senior faculty agreed to participate in that kind of teaching evaluation. I received excuses such as, "You have academic freedom to shape up and present your lectures as you please" or, "Do not worry, you will be all right." However, the person

who agreed to sit in on my lectures — an excellent teacher himself — had invaluable influence on my teaching development, and I shall never forget our discussions and his critiques of my lectures. To this day, I remember his words of praise on the portions of my lectures that I presented well, and I remember the blunt criticism of the inadequately given parts of lectures. That kind of approach helped me tremendously in achieving confidence and reaching my present level of performance in classes.

Unfortunately, teaching excellence, quality, and efficiency are of little significance, if any at all; they are completely ignored at all levels of administration of universities. It is of no consequence how much one loves to teach, how fond one is of students, and how much one cares for students. None of these qualities of good teaching is weighed as heavily as research activities and related publications. The emphasis on research is so overpowering and overwhelming that a person with an excellent teaching record and adequate research is considered a second-class citizen, not as able, not as bright as the researcher. If a person is in a field where it is difficult to attract outside financial support, that person is definitely at the bottom of the line when assessments, raises, and promotions are being considered. On the contrary, if a poor teacher who is disinterested in his or her performance as a teacher goes to classes unprepared, with outdated notes but is an excellent researcher, he or she is glorified, offered as an example, and promoted.

I do not wish to be misunderstood; I do not deny the need for and vital importance of research or the need to publish, to attract outside financial support, and to attract students to graduate programs. I myself am conducting an active research program and have graduate students working with me. After all, it is well-known that only a good researcher can function as a good teacher and introduce the student to the excitement of research and discovery. However, a trend exists in our schools, departments, and divisions whereby excellence in teaching means nothing. Dedicated teachers are discouraged, neglected, rejected — and all this in institutions of higher learning. It is time to recognize the importance of having excellent teachers to educate, interact with students, stimulate interest in discovery, and influence positively the minds of our young people.

Theodore Jochsberger
Associate Dean of Students
Arnold & Marie Schwartz College of Pharmacy
Long Island University

REMARKS

In more than 20 years of teaching, I have discovered some points that I believe are essential to the process of clear presentation of scientific principles. Actually these discoveries were not really mine, but they were ingrained in me by a number of my teachers, three of whom had particular influence on my academic career and what success I have had.

The first of these was my mentor during my pursuit of a master's degree in chemistry. In addition to being my thesis advisor, he taught thermodynamics. As every physical chemist knows, this is not an easy course to learn or to teach. But learn I did. And I learned more than the laws of thermodynamics and entropy; I learned the law of compelling students to examine basic principles carefully, in a systematic fashion. I also discovered the benefit of applying problem-solving techniques both in class and at home. Therefore, when I began teaching, homework became an important part of my philosophy: both assigning it and assuring that it was done and understood.

The second person to help hone my skills was my doctorate mentor. While I never had him as a teacher in a formal course, he taught me the lesson of being concise and instilled in me the necessity of explaining something to others so that it could be unambiguously understood. I have found this useful in my writing and my communication with colleagues, but most of all in the classroom. I truly believe that if one explains something in the most basic terms, using simple analogies, if necessary, even entering pharmacy students can be made to understand it.

Finally, the third person to influence me was my physiology professor. She taught me the value of the lecture handout and, more importantly, the value of organization. Many of my colleagues supply handouts, but too many use them as substitutes for lecturing.

The handout supplies an outline for the students to follow and helps organize the course.

I believe there is a logical sequence in this profession that should be reflected by a logical sequence in the curriculum. The logical sequence in the curriculum, in turn, is reflected by a logical sequence in each course. I believe that much of my success has come from understanding the part my course plays in the curriculum and the part the curriculum plays in training the students for their role as professionals. I think if this is understood and courses are organized accordingly, professors can be satisfied that they have successfully done their jobs.

While there have undoubtedly been many teachers who have influenced my teaching career, these three have been the most important. While there is a great satisfaction in being the "best" teacher, there would be even greater satisfaction in knowing that one has so influenced a student that he or she accomplishes the same thing.

*Robert A. Mangione
Assistant Dean for Pharmacy Student Affairs
College of Pharmacy
St. John's University*

REMARKS

Reflecting upon the teachers from whom I have been privileged to learn brings back many fond memories. I am sure I share the sentiment of most pharmacists when I conclude that they were all outstanding. The challenge of determining who was the "best" teacher one ever had is a most difficult assignment; yet, if we truly search our minds and hearts, one individual eventually comes into focus. After a great deal of contemplation, I focused on Dr. Charles I. Jarowski.

I had the pleasure of being a student in Dr. Jarowski's biopharmaceutics class in my senior year of pharmacy school. Although the

challenges of the subject matter at times seemed overwhelming, somehow he made it all make sense. His lectures were always extremely organized, efficiently presented, and—most important—alive. His enthusiasm for the subject and the profession of pharmacy was contagious, and I am fortunate that I developed his love of teaching. He brought magic to the classroom, casting a spell of knowledge on all who were present. He was always available for discussion after class and was never too busy to share a research idea or to refine a project.

I am very happy to be one of the many pharmacists who have been influenced by Dr. Jarowski. Each time I enter the classroom I try to emulate him, yet I realize that he is the original. I doubt that I will ever be the outstanding teacher that Dr. Jarowski is; however, I do know that I will continue to try. In working toward this goal, I know that I will continue to develop as an educator because I have set a high standard. It has been said that imitation is the greatest compliment that one can extend. It is my hope to compliment my former teacher each time that I lecture to my students.

Carol W. Myers
Assistant Professor of Pharmacy and Therapeutics
School of Pharmacy
University of Pittsburgh

REMARKS

When asked to recall who was the best teacher I ever had, I thought first of my pharmacy college professors who educated me in the science and wonders of medicine and therapeutics. The staff pharmacists at the hospital where I worked as an intern versed me in the day-to-day practice of pharmacy and showed me how to maintain a sense of humor and a love for my work even during the busiest moments, which came often. The pharmacists at my hometown corner drugstore introduced me to the profession with my first

after-school job at age 16. They instilled in me a desire to be just like them: knowledgeable, respected, trusted, dedicated.

Prior to pharmacy school, I was an English literature major at a small liberal arts college. My professors there gave me a broad perspective of the humanities and the world around me that I will always appreciate. High school, junior high, elementary education—I had many learned teachers who schooled me solidly in all the basics. How to choose who was best?

Upon reflection, there is no contest. The best teachers I ever had are my parents. I know that sounds trite and a bit sentimental. But my parents shaped me into the person I am today, and the teacher I have become is a direct result of their gentle prodding, their words of encouragement, their good examples.

From my father I learned devotion to duty. He was a quality assurance supervisor for a manufacturing corporation and worked long hours to make ends meet while my sisters and I were growing up. Recently, he told us that during the years of our childhood, he spent so much time guaranteeing product quality on the job that he was concerned he was not able to provide a quality upbringing for us at home. We reassured him that we never felt neglected. Although my father was devoted to the duty of his job, he was also devoted to his family. He gave us the essentials in life—love, a comfortable home, a sense of family—and we thrived under those conditions.

I share my father's devotion to duty now in the classroom. I worry after each lecture, did I tell my students too little or too much? Did I make myself understood? Did I hurry over an important concept? I want them all to have the best education possible, to thrive and prosper in their chosen profession. Although I know I cannot provide them with everything, I hope they are getting the essentials.

From my mother I learned patience, compassion, and a desire to help people. She worked for many years in the educational system or on its fringes, from teaching preschool children to working as the town librarian. Her last and favorite assignment was as a teacher's aide for a group of mentally and physically handicapped youngsters. It takes a very special person to do the work my mom did with those kids. She gave them love and hope for the future when few

other people did. She cheered their achievements and shared in their triumphs. Tying their own shoelaces, making a peanut butter and jelly sandwich without help, and spelling their names correctly were moments to celebrate. My mother made a difference in these children's lives; she had an impact that went beyond the classroom.

My teaching job is easy compared to what my mother did. In the lecture room, I have before me intelligent and motivated college students who are capable of learning quickly with a minimum of guidance. But I, too, want to make a difference, have an impact on their lives. To that end, I try to teach every lecture with the same intensity of spirit that my mother devoted to her students. It is not enough that I transmit facts. I also let my students know that I care about them personally, that I care about their role as the pharmacy practitioners of the future. I cheer their achievements and celebrate their triumphs as though they were my own because, in a small sense, if I have had any impact at all, they are my own. So to my parents goes the distinction of being the best teachers I ever had.

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WHAT INFLUENCES TEACHING AND LEARNING?

I have been extremely fortunate to be a teacher. Although I very much enjoy being involved with research and publication, consultative practice, and professional service, nothing can compare with my love for teaching and learning. The purpose of this article is to share some of my thoughts about teaching and learning.

I received my primary and secondary education; a B.S. in physics, chemistry, and mathematics; and a B.S. in pharmacy from Indian schools and universities. The positive aspects of my experience were strong encouragement at home and an incentive to work

hard because only a small fraction of students could go to a good college. For example, 20 students were selected from over 1,500 applications for the college of pharmacy I attended. The negative aspect was that too much emphasis was placed on memorization of facts. Most of my teachers showed limited enthusiasm and interest in teaching. The students were never asked to give their opinions. In fact, we were afraid to even discuss any negative feelings among ourselves about the course or an instructor. There were, however, a few teachers who presented the material clearly and appeared to be interested in their work. Nothing thus far had generated any interest in me to become a teacher.

In my senior year in the college of pharmacy, we were required to present a seminar to the faculty and students. It was a fearful experience, but I felt great after having done it. An effective delivery required thorough knowledge of the material. This was the first time I thought I would love to do it again and again.

Then I came to the U.S. to pursue graduate education and received both an M.S. in pharmaceuticals and a Pharm.D. The openness between teachers and students was very refreshing. More seminars and case presentations reinforced my hunger for learning and teaching. I only looked for faculty positions, and I joined Ohio State University in 1977.

Although no single instructor has influenced my teaching, I have learned both what to do and what not to do as a teacher to facilitate learning among students. Although I have taught for 13 years, I look forward to every new year with a fresh viewpoint and energy.

I have two goals: to cover the important concepts and facts and to get students excited about learning the material. I devote a substantial amount of time to preparing and organizing each lecture. I place a greater emphasis on concepts versus content and students' learning versus my lecturing. I pay close attention to students' responses to my teaching. Examinations are designed to test whether students have learned the most important concepts and facts rather than to test memory recall of all minute details.

I have had extremely positive response from students. I believe the students in general are very interested in learning. They can readily sense a teacher's enthusiasm, interest, and caring. These characteristics lead to a positive attitude and motivation among stu-

dents for lifelong learning. I am looking forward to many years of excitement in teaching and learning.

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THERE WAS A MAN

There was a man, a commonly uncommon man. I remember him walking to his class in the morning, dressed in a sports coat, slacks, and sneakers with a flower in his lapel. The flower was not a rose or a carnation. It was a blue slip of a thing that matched the blue of his eyes and had probably been snatched from his garden as he prepared to come to the university. This was a man who could raise raspberries, fish, and square dance with the best, always ready to discuss any subject, especially his favorite: medicinal chemistry.

This man showed the same interest in his undergraduate students as he showed in his graduate students and in his research. In the classroom, the intensity of his knowledge and the expansiveness of his imagination were readily apparent. His eyes were bright with enjoyment, and I partook of that enjoyment. This was a professor, someone to observe and learn from. The air was filled with anticipation, both that of the professor and that of the students. I enjoyed the learning atmosphere. This was as it should be.

Frequently during a lecture and while facing my students, I think of this man. I try to teach the way I liked to be taught. One of the definitions for the word *hero* in Webster's dictionary is "a person regarded as a model of noble qualities," followed by the example "Each man is a hero and an oracle to somebody." There was a man, a commonly uncommon man. His name was Ole Gisvold. He is my hero.

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A MODEL TEACHER

During my formal education, I was fortunate to have several excellent teachers. Among these, one teacher has greatly influenced my teaching and practice of pharmacy. He continues to serve as a role model for me and countless others. That teacher is Timothy H. Self, Pharm.D. Dr. Self is a professor in the Department of Clinical Pharmacy at the University of Tennessee College of Pharmacy.

Dr. Self possesses at least three qualities that have always impressed me. The first quality is a contagious enjoyment of teaching. Dr. Self is not a comedian telling jokes or humorous stories. He is very serious about his lecture subject. However, being serious and being dull are not synonymous. His seriousness is always balanced by enthusiasm. He walks around the room and rarely uses a podium. He leaves the lecture floor and moves into the audience, especially if students leave the front rows of the auditorium vacant. He smiles and interacts with students throughout the lecture. He encourages audience participation by frequently asking questions, yet he never belittles a student who gives an incorrect answer. He somehow makes students eager to learn, a talent few people possess. Most importantly, he makes students realize that he would rather be teaching them than doing anything else.

The second quality that Dr. Self possesses is an ability to present material in a practical manner. Students often feel there is a great chasm between what they learn in school and what they will need to know on the job. Dr. Self diminishes that gap by explaining how the lecture material applies to the practice of pharmacy. For example, after Dr. Self discusses a disease or class of medications, he often presents pertinent patient cases. He then helps students take what they have learned during the lecture and apply it, in much the same way they would if they had been the pharmacist involved. He also demonstrates ways to talk with physicians and other health care professionals with tact and diplomacy. By bridging the gap between

academics and practice, Dr. Self helps students more easily become participants in health care and not merely agreeable observers.

The third quality that Dr. Self possesses is the one that has impressed me most. He has a genuine concern for all students. His office door is always open. Students know they can trust Dr. Self and that his council is confidential. He is a listener and an encourager, two very important roles that many teachers tend to omit. He frequently rebuilds the damaged self-confidence of students. Of all Dr. Self's admirable qualities, it is this one that I most want to emulate.

It has been said that "Those who can, do; those who can't, teach." Nothing could be further from the truth when describing Dr. Timothy Self. Dr. Self is well respected by his peers as a researcher and clinician in the fields of internal and pulmonary medicine. Yet with his vast knowledge of medical literature and national recognition as a researcher, he has not lost his ability or desire to teach. Dr. Self has realized that individual accomplishments are of value, but the investments made in the lives of other people through teaching are invaluable. He has helped me understand that lecturing is not a drudgery or a necessary evil hurled upon all university faculty members: it is an opportunity to be seized.

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REMARKS

I consider the School of Pharmacy Teacher of the Year Award a very significant honor and a milestone in my academic career. Although I have been the recipient of this award on one other occasion, I am still not sure why I have been singled out for this honor

by our students. However, I do believe that there are some qualities that were pertinent to my being so honored.

After discussing this very issue at the AACP meeting with my peers who received similar awards at their institutions, I was able to identify some common factors. I think first and foremost that the instructor must impart to the students that he or she appreciates them not only as pharmacy students but also as individuals. Furthermore, the faculty member should make it abundantly clear that he or she desires that the student learn the requisite material in the course. Certainly this process would be enhanced if the instructor made the relevance of that material to the practice of pharmacy obvious to the students. Most of the recipients of these awards were associated with courses that pertained to clinical practice, making it apparent that the relevancy issue is important.

Effective instruction also requires the students' perception that the faculty member enjoys teaching and that the successful communication of knowledge is rewarding to the faculty member. The faculty member should impart the perception that he or she is concerned that students learn the material and that the material is important. It is important that the faculty member's standards and expectations of class performance be made known to the students at the onset of the course and that these be commensurate with the relevance of the material as it relates to pharmacy practice. Poor performance should never be the subject of banter between students and a faculty member. I make no secret of the fact that teaching pharmacology to our students is the most rewarding aspect of my overall professional responsibilities. I want them to learn, I encourage them to learn, and I want them to know that I care about them as individuals. However, I do demand performance on their part, and I let them know that my respect for them is directly correlated with their professionalism and motivation and not just related to course performance.

In thinking back on my own pharmacy education, the individuals I felt were my best professors were those who made their courses not only demanding but also academically rewarding and made the effort to cover the material they thought was necessary to prepare me for the practice of pharmacy. I respected those individuals who made an effort to effectively use the meager audiovisual resources

that were available to enhance their teaching activities. Those faculty members who spoke with—rather than to—students outside of the classroom and who were involved with student activities also made an impression on me in that they cared about us not only as pharmacy students but also as individuals. It is often very difficult to walk the line of being a friend of the students and being academically demanding of the same students. Those individuals who can maintain that balance are those who are usually recognized as the excellent teachers. It is not always those who seem to be the friend of the students and modify their course rigor to be liked who are recognized as the respected teachers. I believe our students are too sophisticated to respond to such shallow attempts of the faculty to be liked.