1999-2000

Brierly Lecture

On

College Teaching

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Delivered

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Teaching Excellence Program
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Foreword

Every spring the Teaching Excellence Program hosts the Jean Brierley Presentation on College Teaching. This year it is an honor to bring Professor William Condon's perspectives to your attention.

The Jean Brierley Award for Excellence in Teaching provides our faculty with the ability to honor a colleague and, in the process, share his or her wisdom. Professor William Condon has enriched these traditions and provides each of us the opportunity to consider and reflect upon his perspectives.

Please share your thoughts and reactions on this presentation with him. His remarks are his perspectives and reflect his search for strategies to enhance instruction - our common quest.

Lee F. Seidel
Director and
Professor of Health Management and Policy

October, 2000
I want to thank all of you for being here today. It is both an honor and a humbling experience to be chosen as a recipient of the Jean Brierley Award. I know some of the previous recipients, and I realize how outstanding they are as teachers. I once had to give a presentation at a biotechnology meeting immediately following Nancy Kinner. When Nancy finished and I walked up to the microphone, I realized how the unfortunate golf pro feels who has to follow Tiger Woods to the tee – truly a no-win situation. So, to be on the same list with Nancy and other previous recipients of this award is a wonderful feeling. A special thank you goes to Lee Seidel of the Teaching Excellence Program for arranging today’s event, to the faculty and students who nominated me for this award, and to the selection committee for choosing me.

I would not be here today, however, without the long-term support of my parents; my two daughters, Lisa and Tammy; my colleagues in the Department of Animal and Nutritional Sciences (especially Dr. Skoglund who hired me); and above all my number one supporter and best friend, my wife Linda. Her encouragement, love and tolerance over the past 34 years have been invaluable to me.

Neither of my parents (nor any of their relatives) ever attended a 4-year college, but they were determined that I would do so. One of the earliest educational lessons I remember receiving from them was when I was approximately 12 years old. I had spent the day “helping” my father build a workbench in our basement. About midway through the afternoon my mother came downstairs to see how the project was progressing. After looking at it for a while she commented to my father that it appeared he was using an awful lot of lumber. His immediate response was “Anything worth doing is worth doing well.” To which my mother replied, “Yes, but I thought a workbench was used to hold a project of some sort, not to hold up the entire
house.” This combined lesson in “tempered perfectionism” has served me well in my academic career.

However, I did not readily apply this lesson to my schoolwork as an undergraduate. I was a Biology major with a Chemistry minor, because I intended to become a dentist. Attending classes and studying were necessary evils that I had to endure to remain in school and play in student government. Now that was something that I liked, and something to which I readily applied the tempered perfectionism lesson – with little emphasis on the “tempered” portion. And I was rather good at it. By second semester of my junior year I was elected president of the student body.

Then, came first semester of my senior year and a required course in Cell Physiology. I clearly remember Dr. George Wermers drawing a diagram of the Loop of Henle in the kidney, and explaining the transport processes going on there in order to produce urine. I found myself wanting to attend this class; liking to study the material. These feelings were truly novel for me in a classroom situation. I asked Dr. Wermers if I could make a living at this sort of thing (I, of course, should have asked him if I could make a good living at this sort of thing.) He said, “Sure, but you’ll have to go to graduate school.”

I had no idea what graduate school was, but decided to apply anyway. I, of course, then had to explain to my parents that I was applying to this thing called graduate school (that I didn’t really know anything about) and I was doing it because I was excited about a lecture on how the kidney makes urine! They for some reason did not readily understand this. While waiting to hear from graduate schools, I was accepted into dental school and law school. I eventually turned down both of these offers and accepted a position in the physiology of reproduction section of the Animal Sciences Department at the University of Massachusetts in Amherst. My parents were not particularly happy with me. I remember my mother saying something like, “Let me see if I have this straight. You’re not going to become a dentist or a lawyer because you liked a story on making urine, and you are now going to get another degree by studying about sex.” I tried to explain that I had applied to dental school because she and my dad wanted me to become a dentist; and that I had applied to law school because the faculty
and my friends said that I’d be a good lawyer; but I applied to graduate school because I really liked to study physiology. My parents thought I was crazy!

Lisa and Tammy were born by the time I received my Master’s degree so I went to my major advisor, Dr. Donald Black, and told him that I was going to look for a job rather than pursue a Ph.D. degree. He asked me if money were the determining factor and I said that it was. He asked me to give him a week to see what he could do for me financially if I stayed. He somehow convinced the dean to create a Lecturer’s position, and told me it was mine if I wanted it. He did warn me that it would add considerably to the amount of time it would take me to get my degree, but I paid no attention to that and accepted the position.

The first assignment in this Lecturer’s position was to present all lectures and make up all exams for the “endocrine system” component of a two-semester Mammalian Physiology course. I immediately resorted to Dr. Wermers’ lecture style from the infamous cell physiology course (that got me into this in the first place). I knew I could not draw diagrams on the board as Dr. Wermers had done, so I made dozens of overhead transparencies—all of which were diagrams. The first topic was the adrenal gland, and I was told it would take me about three class periods to cover it. I spent three weeks preparing for this first topic, marched into my first class with my “huge” stack of overhead transparencies, and proceeded to use up nearly the entire stack in that first lecture. I, of course, thought they were going to last me at least a week. I was then faced with the challenge of producing enough material to get through the next class, and quickly realized I had less than 48 hours to accomplish what had just taken me three weeks to do. Maybe I should have quit right then, but I didn’t.

From that moment, nearly 30 years ago, until today, the one thing I have never changed is my total reliance on diagrams. I routinely begin a semester by distributing a handout packet. These packets are between an inch and an inch and a half thick, and contain no typing or printed material whatsoever. They are all diagrams. I am a visual learner’s dream come true. These diagrams are usually not labeled, and frequently have no titles on them. I leave enough room on the page for students to take notes, add labels, and add a title while I am lecturing.

About eight years ago I read an article that said the first 30 minutes of the first class in each semester were the most crucial. The author suggested that somewhere in the first 30
minutes all faculty members spend 10 minutes or so talking about themselves — themselves as “people” — not teachers. For example, tell the class where you went to school and why, what you majored in and why, why you are at UNH, why you are teaching this particular course, tell them about your family, your interests and hobbies, etc. I have done this in all of my classes over the past eight years, and I think it is a great idea. It gives the students many ways to immediately identify with you as a person. I guarantee you they will remember far more of this information than they will any course material you present the first day (except, of course, what they need to do to get an A).

The greatest changes in my teaching began six years ago when I decided to devote more of my time and energy to teaching. I volunteered to teach BIOL 411, the fall semester of the College’s two-semester introductory biology course, and during the same year I designed a new course entitled, “Animal Rights and Societal Issues”.

BIOL 411 introduced me to teaching first-semester freshmen (all 154 of them!). That, in itself, was quite an education. I entered this course quite concerned and nervous about the material that I needed to know and cover in the course. Much of the science was not even known when I took my first biology course some 30 years before; and what was known, I had either never learned (remember — it interfered with student government) or had completely forgotten. Those of you who determine the value of a course based on the amount of material covered and/or the degree of detail expected from the students would have loved my course. I was supposed to cover the first half of the textbook, and cover it I did. Detail? The students had to know not only that the process of cellular respiration produced 36 ATPs from one molecule of glucose, but had to know exactly where each of those 36 ATPs were produced.

Some of my concerns and anxiety over the course content were justified, but I was totally unprepared for the fact that I was dealing with “high school seniors plus a summer” (a more accurate term for first-semester freshmen) — many of whom had been through middle and/or high school under a “feel good” curriculum (term adopted from Maureen Stoat’s new book entitled “The Feel-Good Curriculum”), a curriculum in which increasing self esteem took priority over academic achievement. They were quite used to getting A’s for merely showing
up or making an effort. The idea of "earning" a grade or "competing" for a grade was not only foreign to them, it was considered "bad" for them. It endangered their self-esteem.

After less than three weeks of class, I was shocked when I was approached by four young women from the class. They said that they were sure that I was unaware that I had scheduled an exam for a Monday immediately following Parent's Weekend, so they wanted to know when I planned to reschedule it. I told them that I was indeed not aware of that fact, and asked them why that was a problem for them. I, of course, expected them to tell me about how far their parents were going to travel to spend the weekend with them, and how much time visiting with their parents was going to take. But, no! Their parents were not even coming to UNH for the weekend. The four of them were going home for the weekend, and wouldn't have time to study because they had to spend time with their former high school friends. They were dead serious, and could not believe that I would not change the exam date. I knew then that teaching the course content was not my only concern!

Because I knew that these freshmen were part of the computer generation, I decided to augment my old-fashioned presentation mode of overhead transparencies with the use of a laser-disc that was projected from the large 3-gun projectors hanging from the ceilings in the super-tech classrooms. So for every lecture I had the overhead projector on one screen and the laser-disc on another screen, and I bounced from one side of the room to the other -- back and forth, back and forth between the two. The students must have thought they were watching a tennis match.

In spite of the awkwardness of this method, I realized there were many things that could be used to visually enhance a presentation that could not be accomplished with an overhead projector. I realized, however, that I had to change the practice of using both an overhead projector and a laser disc at the same time. So, after two years, I abandoned both of them in favor of computer-driven PowerPoint presentations.

With PowerPoint I could create "text" slides for definitions, etc. that were more readable than those on overhead transparencies, and I could scan in diagrams and pictures from books, magazines, newspapers, etc. The greatest gain was the fact that I had gone from a black and white format to color. Some faculty have told me that it doesn't matter if diagrams are in black
and white or color. I wonder how many of them go home and watch a black and white television. Color-coded diagrams that I had saved for years but could not use with the overhead projector were now useable. Color pictures in one day’s newspaper could be scanned and incorporated into a presentation for the very next class.

Over the past two years I have redone all of my presentations in all of my classes using PowerPoint. Another advantage to using PowerPoint, especially in classes comprised of freshmen, is that it greatly narrows the generation gap between the professor and the students. Now, if you are 35 years old this is probably not relevant; but if you look as old as I do, the last thing you need to do is walk into the classroom carrying an overhead projector – i.e., an object that screams “old,” “outdated,” or even “antique.” Freshmen can identify with laptop computers – they cannot identify with overhead projectors. Projecting your lectures from a computer gives the students some hope that they can relate to you and vice versa. It narrows the generation gap.

While I was dealing with laser discs, PowerPoint and all of the associated technological issues (you MUST become good friends with Marshall White and his coworkers and with Joe Danahy if you use this technology), I began teaching the course “Animal Rights and Societal Issues”. There are no lectures in this course, so PowerPoint did me no good. It is a discussion/debate format with lots of reading and writing. As one of my colleagues said when I announced I was going to offer this course, “Oh, you’re going to teach one of those touchy-feely, liberal arts courses that require no preparation.” If this course is supposed to require no preparation, I am a fraud, because I have to spend more time on this course than on any of my other courses.

Of the students in my Animal Rights class, 30-40% of them have already taken one of my other classes – either Biology, Physiology of Reproduction, or Endocrinology. The biggest surprise to me has been the huge lack of correlation between their performance in my science, lecture-based courses and this course. Some students who achieved high A’s in the lecture-based course have trouble getting low B’s, while many students who worked very hard to get B’s in the lecture-based course have no trouble getting solid A’s in the Animal Rights class.
While this latter group had great difficulty answering essay-style questions based on factual material in the lecture course, they had no trouble whatsoever writing 40-15 page papers critically evaluating a book, taking and defending a stand on a controversial issue, or writing papers or journal entries reacting to videos shown in class or reacting to class discussions. They will frequently include material on ethical, philosophical, and socioeconomic issues from their other classes.

Some students who could write perfect, 2-page essays answering factual questions from the lecture classes, have a terrible time dealing with these written assignments in the Animal Rights class, and never include information from other liberal arts based courses. A small group of students handle the material in both types of classes with ease and proficiency.

About this time, I attended a presentation by Lee Seidel who was discussing the importance of making information in science classes relevant to everyday issues. He called it an Issue-Driven approach, which advocated the reading of short articles on current scientific issues by all students followed by a classroom discussion of the article BEFORE the scientific principles relating to the issue were presented in class.

My initial reaction was “I’m already doing that.” I had always tried to give current examples from everyday life to demonstrate scientific principles. I’d give a lecture on steroid metabolism, and then talk about the misuse of anabolic steroids by athletes, especially in the Olympics; or I’d lecture about primary, secondary, tertiary and quaternary shapes of proteins and then use mad-cow disease as an example of the relevance of protein shape.

Nearly three years ago now, I was asked to teach a section of BIOL 411 that was comprised of all non-first-semester freshmen, i.e. those majoring in one of the biological sciences (including ones who had previously failed the class as first-semester freshmen), non-majors from every college on campus (including premed students and those taking it strictly to fulfill a General Education requirement), undeclared students (primarily sophomores from LS&A and LA), and non-traditional students (registered through DCE).

Faced with this diverse population of students, I altered my course objectives and decided to try Lee Seidel’s Issue-Driven approach. I spent the summer collecting articles from many popular press sources, including the science sections of newspapers. During the third class of
the semester, I distributed the first articles (two, one-page stories on the outbreak of mad cow disease in Great Britain). I told the students to read the articles, discuss them with their roommates, friends and family, and be prepared to discuss their reactions to the information as well as the reasons for their reactions and/or conclusions.

I walked into the next class thoroughly convinced that I would be unable to elicit a discussion among 124 students. I was sure I would get absolute silence – either because they hadn’t read the articles, didn’t understand the articles, were not used to having to actively participate in a “science” class, etc. Well, 20 minutes later I had trouble stopping the discussion! The students had read the articles, they had discussed them with others, and they were happy to exchange different reactions. The reaction to almost all of the articles for the rest of the semester was equally enthusiastic. Following each such discussion, I presented my usual lecture of the scientific principles for each of the articles.

The proponents of this Issue-Driven format claim that its major benefit is to increase retention of information. It definitely increased short-term retention, because not one student received any questions from that lecture wrong on the first exam. My major concern, however, is with long-term retention of information. I was now in my fifth year of teaching BIOL 411, so I now had two years worth of students who had taken my BIOL 411 class and two or three years later were in my 700-level course in the Physiology of Reproduction. During BIOL 411, I had stressed certain basic principles such as ATP and energy or cell membrane composition and fluidity again and again throughout the semester – convincing myself that at least the good students would remember this information so that when I saw them again in my 700-level courses I would not have to devote class time to these topics. Was I ever wrong! Student after student who had gotten straight A’s in MY BIOL 411 class acted as though ATP and membrane fluidity were foreign concepts when I asked about them three years later in my 700-level classes. I used to blame this student amnesia on instructors of BIOL 411 or other entry-level courses. Who was I going to blame now? I had no one to blame but myself.

Next fall I should have some of my BIOL 411 students from this “Issue-Driven” class in one of my 700-level courses, and I’ll see if this discussion format increases their long-term retention over that of previous students from my straight lecture format classes.
Although increasing retention of information was my primary goal for the issue-driven approach, it accomplishes many other things that I had not anticipated. The greatest benefit is that it gets students interested in reading current, popular press science articles. As a whole, students are afraid of science. In this BIOL 411 class of 124 non-freshmen that I’ve been referring to, not a single student read the weekly science section of either a daily newspaper or a weekly news magazine when the class started. Their biggest reason – they were afraid they wouldn’t understand it. We, as science teachers, of course propagate this fear of science. We routinely use the phrase, “You don’t have to be a rocket scientist to know that;” or, “You don’t have to be an Einstein to know that.” What we are telling the students when we use these phrases is that to become a scientist you have to be smarter than you do to be students in other disciplines. We’re implying that they must be smarter because science is more difficult than English, History, Business Administration, etc. Why don’t we walk around saying “you don’t have to be an English major to know that,” or “you don’t have to be a Shakespeare to know that”? I would have a much-harder time succeeding as an English Literature major than I ever did as a Biology major.

Anyway, by requiring these students to read science articles from the New York Times, USA Today, the Boston Globe, Time and Newsweek, and then discussing them in class, they overcame their fear of the weekly science section. By halfway through the semester, I had dozens of students bringing me articles from popular press sources – not as part of an assignment, but merely because they had read them and were excited about them. That trait will be more helpful to them when they leave UNH than any set of facts that we require them to memorize.

Discussion of these articles in class also allowed me to do some “sneaky” teaching – the kind where students are learning when the teacher is not apparently “teaching.” For example, I drew their attention to the author of every article and asked about such things as the author’s qualifications, the author’s association with a particular industry or group and how that might affect the author’s views, etc. It gave me dozens of chances to draw attention to “unscientific” facts in the articles and relate wrong or questionable conclusions to errors in experimental design or other failures to adhere to the scientific method. The complete lack of appropriate
control groups and the confusion between “correlation” and “causation” are rampant in popular press science articles. By the end of the semester, the students were readily picking up these deficiencies on their own. They were learning the scientific method without me ever using the term. Just as a photographer’s best pictures are often taken when the subjects do not know they are being photographed, I wonder if the best learning occurs when the students are unaware of being taught.

About this time, I received a phone call from my daughter, Lisa. She was in vet school and called to ask me what a hormone was. Well, I readily rattled off the classical definition of a hormone, which began with, “A substance secreted by endocrine glands…” When I finished, there was a long pause, and Lisa finally said, “OK, but what is it?” To which I replied that it could be a protein, a steroid, an eicosanoid, or an amino-acid derivative. Now she had something concrete to deal with. She knew what a protein was, what a steroid was, etc. My revised definition of a hormone now begins not with “A substance…”, but with “A protein, steroid, eicosanoid, or amino-acid derivative…”, and I then proceed to discuss each of these four groups.

Someone once wrote that to be a good dairy farmer, one must think like a cow. What Lisa had taught me was that to be a good teacher, one must think like a student, and to tell a student that something is a “substance” may be technically correct, but it is not particularly helpful.

We are now up to last semester – the fall of academic year 1999-2000, the last semester of the 20th century. You’re probably thinking that my definition of a good teacher of the 1990’s is one who uses lots of technology (especially computers and PowerPoint) and has students sitting in circles, holding hands, and singing “Kumbya”. Well, I know some colleagues whose high-tech development ceased somewhere between Eli Whitney’s invention of the cotton gin and Alexander Graham Bell’s first phone call, yet they are superb teachers.

I am not saying that using computers is essential or that using computers will transform a poor teacher into a good one, but I am concerned that computer-phobia will become a severe detriment for faculty in the very near future, not because of PowerPoint, but because of the Internet. Just as slide rules, hand-held calculators, and laser-discs have come and gone, so too
will PowerPoint. The Internet, on the other hand, will not—at least not in our lifetime. We are already dealing with students for whom the Internet is an integral part of their everyday lives—not merely their academic lives, but their entire lives. And, we’re told that the Internet is only in its infancy. Internet II is already nearly upon us.

I’m afraid that adoption of the Internet by all faculty will soon become a requirement. All courses will have to be adjusted, the curriculum revised, the testing altered, etc. to accommodate use of the Internet. Some faculty have already been ordered to incorporate the Internet into their courses (at UCLA and BU, for example).

If I am right, what will characterize a good teacher in the 2000’s, as opposed to the 1990’s? If the last century stressed desirable faculty traits such as motivation of students; clear organization of course material; treating students fairly; setting clearly-defined, demanding goals; sorting relevant from irrelevant information; and increased faculty-student interaction in the classroom, will these characteristics become obsolete in the current century?

In my opinion, no. Why not? Because we will still be dealing with students who are human beings, and as such they will still need to be motivated; to have information selected, organized for them, and explained to them; to have clear, reasonable goals set for them— and they will still need interaction with faculty— and will still want and need to be evaluated and treated fairly.

Will the Internet help with these needs? No. Will the Internet convert a poor teacher into a good one? Absolutely not. To be an effective teacher in this century, one will have to succeed in spite of the Internet.

Am I reverting to a Luddite mentality here? Am I rejecting the Internet? No. Last semester I wholeheartedly utilized Blackboard in all three of my classes. Blackboard is a nationally utilized program that provides the faculty member with an Internet skeleton or backbone for course information. The faculty member controls access to the site and has sole control over what information is made available to the students. Whatever information the faculty member puts into Blackboard is available to students in the class from any computer with Internet access anywhere in the world, 24 hours a day, 7 days a week. For example, I put all of my PowerPoint slides from each class into Blackboard. I used it to post copies of old
exams – instead of putting them on reserve in the library. I used it to post announcements and have work assignments, including direct, Internet connections (URL’s) to articles in science journals, newspapers, etc. Overall, it is a very useful tool, and I will continue to use it.

However, as with all new technologies, its advantages are accompanied with some new problems. For example, why should students attend class if the course content (PowerPoint slides, lecture notes, etc.) is available to them in their dorm room via the Internet? Other concerns? Once the course content is on the Internet, whose course is it? The faculty member’s? The University’s? What if a private, for-profit organization wants to buy the course? Do you have the right to sell it? Who gets the money? What if a student sitting in your class sells his or her notes to a company who then makes them available to other students via the Internet (for a price, of course)? These situations are already happening at universities across the country.

These, and other problems, arose because of the Internet, but they are not insurmountable. We must solve such problems because we must incorporate the Internet into our courses. If we do not, we will have a very hard time relating to our students.

So, the challenge, it seems to me, is to step into this century with one foot. Don’t stay planted in the last century, but don’t jump into this century with both feet – abandoning connections with the “old-fashioned” 1990’s. I’d suggest leaving one foot firmly planted in the last century so that you remain connected to the traits of caring, motivating, leading, challenging, etc. that have always been, and will always be, essential to being a good teacher.

With one foot in each century, it will be easy to form a bridge to connect the “old” with the new – whether the “new” is the Internet or anything else.
About Jean Brierly...

Jean Brierly (1908-1986) graduated from the University of New Hampshire in 1930 with a baccalaureate degree in zoology. After leaving the University of New Hampshire, Ms. Brierly became a teaching assistant in the Zoology Department at the University of Michigan in Ann Arbor until 1937. The University of Michigan awarded her the degree of Master of Science in 1931 and Doctor of Philosophy in 1937. In 1938 she moved to Texas State College for Women in Denton, Texas, where she was an Assistant Professor in Biology. In 1945 she joined the faculty at Michigan State College, teaching freshman biology and natural sciences. She retired from the faculty at Michigan State University in 1973 as a full Professor.

Professor Brierly was a member of many professional organizations including the Genetics Society of America, Society for the Study of Evolution Michigan Academy of Science, Sigma Xi, and the American Association for the Advancement of Science (AASS). She was active in civic affairs as a member of the League of Women Voters, Common Cause, the Sierra Club, National Organization of Women, and Concerned Scientists. Her many interests also included travel.

About the Jean Brierly Award...

Professor Brierly established an endowed fund in 1973 to recognize teaching in any field or discipline at the University of New Hampshire. This fund was completed upon her death as a tribute to those members of the UNH faculty who have distinguished themselves as teachers. One award is rendered each academic year as our highest recognition for excellence in teaching. Working with the UNH Teaching Excellence Program, recipients host an annual event to advance the teaching mission of the university.

Recipients have been:

1991-1992  Lester A. Fisher, Department of English
1992-1993  Christopher F. Bauer, Department of Chemistry
1993-1994  Wallace A. Bother, Department of Earth Sciences
1994-1995  Marc W. Herold, Department of Economics
1995-1996  Nancy E. Kinner, Department of Civil Engineering
1996-1997  David J. Hebert, Department of Education
1997-1998  Robert Kertzner, Department of Kinesiology
1998-1999  Terry M. Savage, UNH-Manchester
1999-2000  William A. Condon, Department of Animal and Nutritional Sciences
2000-2001  Ronald V. Croce, Department of Kinesiology

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