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Brierley Lecture on College Teaching

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Teaching Excellence Program
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Foreword

Each spring the Teaching Excellence Program hosts a luncheon after which the current recipient of the Jean Brierley Teaching Excellence Award speaks with colleagues about teaching and learning. This past spring, Professor Wallace Bothner of the Earth Sciences Department invited us to “celebrate good teaching and responsibility to students”. His comments set forth a number of examples of what this invitation entails.

Professor Bothner also challenged us to make teaching more than a professional disciplinary activity – something solely done FOR students. Rather, he argues for teaching as personal investment – in which learning is done WITH novices who rejuvenate us with “enthusiasm, interest, need, and challenge”. Furthermore, we faculty are invited to learn BY teaching with and talking with each other, despite our ranks and roles in the institutional machine. We are reminded that we are all – students and faculty and administration – collaborators in the construction of knowledge. Professor Bothner urges us to take the time to reflect on this common purpose, and then to exemplify it in deeds.

Christopher F. Bauer
Associate Professor of Chemistry
Teaching By Example,  
With Example,  
For Example

Wallace A. Bothner¹  
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Thank you, Chris, for that introduction. I am very honored and humbled to have been recognized this way for doing something I have enjoyed doing so much for so long... in the classroom, in the lab, and in the field... with students and with colleagues. In addition to those emotions, this award conjured up a bit of anxiety, and, given the tenor of the times, an increased pensive air that includes increasing frustrations that are often support-based, a charged atmosphere, and now the request to “work-to-rule”². All of this has detracted from our main mission as I understand it, and at a time when I want very much to celebrate that primary mission with you -- good teaching and responsibility to students. To do that, then, at least for the next 20 minutes or so, let’s talk about teaching as the faculty we are, regardless of our titles.

TEACHING BY EXAMPLE, as part of the title, is based on the view that one cannot presume to tell another how to teach, and, except within some broad curricular constraints defined by discipline, department, or accreditation board, much less what to teach, and on the fact that there are probably as many effective styles as there are individuals here this morning. Few of us, I suspect, have the expertise or time to examine all of them. Like many, I have not spent much time studying pedagogy explicitly. Chris nicely reminded us of that last year.

However, I can share some thoughts on teaching as I have come to understand it and how I view my role in that process. So, in keeping with Jean Brierley’s intentions, I want to offer a perspective, an opinion or two, and an invitation that bears on the advancement of teaching and do so simply by prefacing a few examples using three prepositions (with apologies to Abraham Lincoln): teaching BY example, WITH example, FOR example.

¹. Author’s Note: This is the text of the award lecture, from which there were some minor deviations. Footnotes have been added to expand some points and to cite pertinent literature sources.
². AAUP recommendation for faculty action in response to contract negotiation impasse, April, 1994.
Teaching by Example

What do I mean? Perhaps most simply, just think back a few years. In one way or another each of us can identify one or two individuals, possibly more, who have had a major impact on our teaching careers, including present and retired colleagues and, professionally, perhaps our graduate advisors with whom close, mentor/student relationships developed, where learning with, not doing for, was the rule rather than the exception -- a good start to what we do now at the graduate level, and hopefully a growing mode in undergraduate education.

[I was encouraged by Walter's comments on Sunday afternoon in this regard.]4 Further back, to our own undergraduate careers, can we identify another one or two individuals who significantly broadened our perspectives, perhaps in fields quite removed from those we now hold dear, by taking the time, to be available, to talk with us and not at us? I suspect so. And I must push even further back, to include parents and family -- thank you all. In all of these instances, we have benefited BY EXAMPLES set by others, now, and at times in our lives when we were all in "smaller shoes", shoes now worn by our students, our children, and for some, our grandchildren. We learned by watching and by doing. Are we now as successful as they were then?

Let me cite two more specific examples, both involving senior faculty, neither in formal mentor relationship, [though at the time I sure felt the novice] whose example had a significant effect on the development of my teaching.

At Wyoming, I served as Teaching Assistant for Professor Samuel Knight, and, on his retirement, became the instructor of his introductory course my final year there. "Doc" Knight was the second "father of Wyoming geology" (his father was the first). His were BIG shoes to fill.

Doc was nationally known for his "chalk talks". He used the board as a canvas to bring the geologic history of the Rocky Mountains alive for his students, almost animating geologic feature and process. His initial approach in a large introductory class was to face the students, draw a nearly perfect circle on the board behind his back, stand aside and say "ladies and gentlemen, this is the Earth" and proceed to dissect it. Not all, not many, can do what Doc could on the board [even with lots of overheads], but the point learned from him and his examples that affects us collectively is the tremendously positive effect of abundant infectious enthusiasm when brought to the classroom, as well as organization and clarity and pace of presentation both to illustrate our subject, and to involve our subjects. It helps to be able to draw a little, too.

Here at UNH I was equally fortunate, perhaps more so. Early on (late 60's) the department made a change in the introductory level course offerings which provided me the opportunity to teach with nearly all of the faculty (then six or

3. Professors Emeriti Donald H. Chapman and Cecil J. Schneer were particularly helpful to me early in my career here.
seven of us) over the course of the year. A team teaching format was initiated and as "coordinator", I attended all the classes. There, I was exposed to a great variety of teaching styles from a group of faculty representing then, collectively well over 100 years of classroom work. Teaching -- by example -- epitomized... some approaches better than others, some that would work for one but not another. BUT, at the 400-level that experiment failed, perhaps because there were too many cooks in the kitchen, too many different styles for some 200 undergraduate students, and, given that variety, it was difficult to maintain a common educational thread. We learned and shortly reduced the number of participants to two or three faculty, each with longer stints but common responsibilities and it worked better.

As a further comment on team teaching, our attempt was to give the students more by involving specific faculty with particular expertise in particular subject areas. In some courses, both introductory and advanced, that practice is still in place; in others, individual faculty prefer to hold their own. For some of us it has been an important educational tool because of the range of expertise and diversity of opinion brought to the classroom. The give and take between faculty during class, sometimes preplanned, sometimes spontaneous, representing pro and con positions on a variety of issues, adds insight, fills cracks, raises questions, and provides important examples of "real world" argument, as intended. Additionally, it is an important way for faculty to hone their own teaching techniques -- we learn from one another, and as we become increasingly interdisciplinary, we will probably use this method more.

Ah, but there's a rub -- a glaring proviso -- that the team participates together, that each attends the lectures of the other or shares the labs or the recitations. Unfortunately, given increased responsibilities and pressures in administrative, research, and service arenas, regular attendance of both/all participants is less common at the introductory level now than in the past, and can be quite variable in intermediate and advanced undergraduate courses and graduate seminars, as well. If the approach is to be used, I think we make a commitment to the students, and every effort should be made to be there, regularly, in class and out.

The main point that I want to emphasize from the above is the following: few of us are born teachers. Many of our skills are acquired and enhanced BY EXAMPLES set by others. Teaching with others who provide informal constructive criticism goes a long way in our own development, and thus should be encouraged. In addition, that "advice and counsel" is now more formally available through the Teaching Excellence Program; we hope it will be used. After all, WE are now the EXAMPLES.

Teaching With Example

The second preposition, teaching WITH EXAMPLE, might be considered on a lighter side --- No, I didn't forget the "Milky Way" bars, as was suggested
by several colleagues at lunch a few days ago. But, it's a bit early for sweets and I don't want to tempt those of us watching what we eat; in addition, we can each think of better ways to spend that money...

Real life and anecdotal examples, some recalled and probably embellished from our times as students, and analogies drawn to common everyday objects, observations, and occurrences are absolutely critical to increase awareness and to improve understanding, and perhaps show a more “human” side to some of topics and issues we discuss. For me, they provide a very necessary means to clarify and to portray geological features and processes, and to improve three-dimensional visualization and thinking. Each of you, I’m sure, has similar reasons for your choices and your uses.

Let me share a couple of groups of examples of teaching with example that I've found particularly effective. One group formed the basis for a talk during the NAGT meeting organized on campus a few years ago, the topic: “Tips to teach tectonics... or edible structural geology”. Foodstuffs have been a favorite for a long time. They are a familiar daily requirement of us all. They are present in great variety of shapes, sizes, textures and colors. They vary widely in physical properties, occur in both solid and liquid states, are sensitive to temperature and pressure changes, and may have interesting after effects. They can be examined in various stages of growth, preparation, combination, and consumption. Examples include:

- layer or marble cakes for Grand Canyon stratigraphy or for swirled metamorphic rocks like those near Manchester,
- grilled meat to illustrate baked margins of lava flows and dikes,
- cream puffs and eclairs (homemade of course!), to illustrate magmatic inflation -- Mt. St. Helens comes to mind,
- shriveled apples to illustrate contractional folding and dried pudding, tensional fracturing,
- foods forgotten in the fridge (What various alteration products and examples of dehydration “fossilization” they provide!), and
- most common candy bars for stretching and folding experiments -- They are conveniently temperature sensitive so demonstrations of what we expect to occur throughout the earth's crust and mantle can be reasonably, though only qualitatively, modeled.

All in good taste and, in the end, after “deformation”, most taste good. I must freely admit to a dessert mentality in these and a large number of other examples; with a little work much of our breakfast might be included as well!

The second group includes the “world around us” and us -- from bathroom tiles and wallpaper patterns as illustrations of crystal symmetry, to snowdrifts and snowpiles, to skims of mud on sidewalks -- dried and cracked or wet and

slick, stop signs, ice cubes and broken glass -- all provide realistic perspectives of features or processes. Folded blankets and modeling clay match many Appalachian-type mountain systems as well as complex fold patterns like those along the New Hampshire coast; if extended, the Basin and Range, if sheared, the San Andreas or the closer Portsmouth fault. Oh, for a few boxes of old computer cards! Skinned knees from sliding into second or an unwelcomed fall can mimic whole ranges of fault related features, in ways most all can relate -- and with feeling! A more distant example, drawn from the 40's, includes Gram's wringer washer. Here, I sometimes run the risk that examples are lost on students, and that clearly dates me, but with a little explanation the examples seem to have the intended effect.

The point of all this is very simple [Ockham's razor 6 may apply]: a common sense approach to the use of the familiar, be it food or any of a myriad of examples we each may be thinking about now, can make an abstract concept or a complicated structure more obvious, more realistic. The examples should maintain and build interest at a pace that allows for absorption at a level that challenges without intimidating. If a finger is to be pointed to make the point jokingly [or otherwise], it should always be at oneself and not at the student. And all should foster an environment conducive to active learning where our students are "help[ed] with hidden hands" 7 to "see what they're looking at", and to extend the quote from the Rev. Bernice King, "understand what they're seeing, learn from their new understanding, and do something with what they've learned." 8

Teaching For Example

The third preposition, teaching for example, seems so simple, but has been the hardest for me to articulate of late; let me try. Teaching, FOR EXAMPLE, is the number one mission of this institution. So it is stated in the mission statement and articulated far better than I by this institution's officers and its' governing board, and I agree. I suspect most agree. It's what we're here for. Why should I/we question it? For over 25 years, teaching has been and continues to be my principal responsibility here. The other responsibilities follow (scholarly and service activities) and they have been judged as appropriately balanced. But now ----

Many of us feel overwhelmed with additional responsibilities in and out of the classroom... not all which is a function of getting older. We are faced with requirements for new justifications for our programs and positions... some of

6. The "principle of parsimony," attributed to 14th century English philosopher William of Ockham, here used in the sense that explanations using fewer assumptions are more easily understood.
that certainly justified. Some of the spirit of collegiality has been lost... that too, some of our own doing. We’re all too busy; many pulling in different directions, each to a different drummer or their own. There is less communication and little time for reflection. Some are criticized for doing too little. AND in the next breath, we are identified as the “heart of the University”.

Those past few comments paint at least a tired heart in what may surely seem a “professorial lament”, and I started this talk with the desire to CELEBRATE our teaching mission -- I don’t want to close on a down beat.

So, here’s a try and an invitation:

The best corollary of the principal mission statement for me is the affirmation that the students represent the most important group on campus. Their education is our principal responsibility and they are best served by the good -- no, excellent -- teaching we strive to provide, and in an environment of mutual respect. If we are the heart, then surely the students provide the necessary infusion of enthusiasm, interest, need, and challenge for its (our) rejuvenation! Let’s face it -- without them, we would not be, and in many ways we owe them. I told a group of our students last year when they served up one of my examples (a Boston Cream Pie) after they learned of my selection for this award, “It’s largely your fault” and, although they seemed surprised by that response, it’s really quite true. I am, and we are, very fortunate! We have some very fine students. Get to know them!

Finally, an invitation. It stems from comments made by Dr. Shirley Strum Kenny⁹, who visited a few weeks ago as part of the Centennial Summit Lecture Series. She emphasized that “building community” was the key to institutional survival and noted emphatically that most administrators and directors share faculty rank. They and we, better you and I, comprise the faculty.

SO -- To all our faculty not now regularly in a teaching role, please join us... again... if but for one course or seminar per year. Think what you can add to the educational process by example, with examples based on your new experiences, not to mention from your particular field of expertise, for example. And, given present hiring constraints, we can certainly use the help... and some are already helping, thank you. With this invitation is a sincere hope that in some small way, a return with increased visibility might help to restore the level of respect and trust that is needed, I think, to move forward, and in many more important ways than buildings and sidewalks. We do need each other as advocates if the qualities of this institution are to be sustained.

What examples are we setting? I hope ones as beneficial to our students as past ones have been for us. Thank you.

About Jean Brierley . . .

Jean Brierley (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. Brierley 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 Master of Science in 1931 and the Doctor of Philosophy in 1937. In 1938, she moved to Texas State College for Women in Denton, Texas, where she was an Assistant Professor of Biology. In 1945, she joined the faculty at Michigan State College, teaching freshman biology and natural science. She retired in 1973 as a full Professor.

Professor Brierley 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 (AAAS). 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 Scientist. Her many interest also included travel.

About the Jean Brierley Award . . .

Professor Brierley established an endowed fund in 1973 to recognize teaching excellence 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 the 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, Professor of English
1992-1993  Christopher F. Bauer, Associate Professor of Chemistry
1993-1994  Wallace A. Bothner, Professor of Geology
1994-1995  Marc W. Herold, Associate Professor of Economics

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