

Classroom Research: Implementing the Scholarship of Teaching¹

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It is always surprising to those of us who plan to prepare for the future as soon as we get time to find that the future has arrived! In less than five years, the calendar will turn the page and open on a new century. Although the year 2000 is just a number, to our numerically-obsessed culture, it offers speakers a once-in-a-hundred-years opportunity to reflect on the past and take a shot at predicting the future.

In reflecting on my 40 years in higher education—starting with graduate school in the 1950s—I found that the sources of power and influence in higher education can be roughly divided into distinctive decades.

The 1950s was the decade of the faculty. Jobs were plentiful, research grants flowed freely, tenure was quick and uncomplicated. Students, many financially supported by the G.I. Bill, were mature, serious, and eager to make up for the lost time of the war years. Teacher, researcher, or both, it was a wonderful time to be a faculty member.

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The 1960s was the decade of the students. The baby boomers, the largest group of 18 year olds in the history of time, constituted a significant mass on college campuses and they made their voices heard with nonnegotiable demands and fresh idealism. Despite the general impression that the 1960s were hard on administrators, administrators of the 60s were clearly in the driver's seat. Higher education was a growth industry; access to college was a national priority; the economy was strong; and students were plentiful. Throughout the late 1960s, community colleges were established at the incredible rate of a new college somewhere in the nation each week. And existing colleges were expanding in almost every way, including broader missions, carried out by the addition of many new programs. Administrators were engaged in selecting sites, building buildings, hiring faculty, developing new programs. Despite the headaches brought on by a noisy student body, it was a great era for administrators.

The 1970s turned a sharp corner and plunged the high optimism and euphoria of the 1950s and 60s into a competitive fight for survival. The baby bust generation arrived on campuses in dribbles insufficient to assure full classes and full dormitories. Marketing was big time on many campuses, and admissions offices underwent a transformation to "offices of enrollment management." Research grants were drying up for faculty, and administrators were fighting the battle of the budget. There were dire predictions that many independent colleges would not survive.

In the 1980s, the power to drive the engine of higher education shifted to forces off the campus — not administrators, not faculty, not students, not even trustees, but the public press. The reform report entitled, *A Nation at Risk*, published in 1983, hit the newspapers and the media with unprecedented force. Its sound bites of quotable quotes — "the rising tide of mediocrity" and "unthinking unilateral educational disarmament" — appeared everywhere, and the statistics showing how poorly American students performed on measures of academic competence—"indicators of risk," they called them — alarmed the public about the quality of the public schools. *A Nation at Risk*(1) was followed by more than 30 national reports on educational reform and the appointment of some 300 state task forces. Concern soon spread to higher education, and in 1986, the National Governors' Association published a report ominously titled, *Time for Results*. The section on higher education was introduced with these words: "The public has the right to know what it is getting for its expenditure of tax resources; the public has a right to know and understand the quality of undergraduate education that young people receive from publicly funded colleges and universities. They have a right to know that their resources are being wisely invested and committed." (2)

That and similar sentiments set the stage for what I shall call the "accountability decade" of the 1990s. Power to drive the engine of higher education shifted in the early years of the 1990s, from the press and a vaguely defined "concerned public" to those who could presumably do something to assure the quality of education, namely legislatures and accrediting agencies. Through their actions, these bodies demanded assessment in the name of accountability.

So here we are, facing the year 2000 with every expectation that the power structure of higher education will once again change to give a distinctive imprint to the first decade of the new century. What will it look like? Who is in charge?

What is the agenda?

As I found in my reflections on the past, change in higher education is rarely abrupt. Like the waves of the ocean, new energy is always building out at sea even as the old waves release their energy on the shoreline with force and high visibility. So, what waves are building now, possibly ready to break on the shoreline of the 21st century?

I am optimistic. I believe that the power to drive education will shift back onto the campus. People will conclude that good strong education is run from inside — not from outside the institution. Thus, I shall label the first decade of the new century, the decade of responsibility and service. The '70s scared us with its threats to survival; the '80s told us — and everyone else — our faults: the '90s attempted to force us to change by demanding accountability. I believe that the 21st century will open with a broad theme of accepting responsibility for the quality of student learning. The signs are already all around us. But I want to talk especially about two waves that are joining forces out there just beyond the shoreline to create a wave of considerable magnitude. One of the contributing waves is fueled by new directions in assessment; the other by a redefinition of faculty roles and rewards.

In the first wave, there is a clear shift from assessment for accountability to assessment for improvement. In the early years of assessment, the compelling question for assessment planners was, What do THEY want? What sort of data must we collect to satisfy the requirements of accreditation review or state mandates? The new question emerging on many campuses is, What do WE need to know about student learning in order to improve the quality of undergraduate education on this campus? Collecting assessment data on student learning outcomes for report to external others is one thing; collecting it for internal use in making changes is quite another.

The second wave that is forming in the seas of higher education and merging its energy with the wave of assessment to improve student learning is attention to the roles and rewards of college faculty members. The impact of the special Carnegie report entitled *Scholarship Reconsidered*(3) has already been enormous, and it is building energy as it moves toward the shoreline of the 21st century. Basically, the intent of the Carnegie report is to correct what most people — including more than two-thirds of the faculty in higher education — see as an overemphasis on research and publication as the route to promotion and tenure. The Carnegie report calls for a broader definition of scholarship, encouraging the recognition of four separate, but overlapping functions — the scholarship of discovery; the scholarship of integration; the scholarship of application; and the scholarship of teaching.

The Carnegie report is a vivid example of the waves of change in higher education. The roles of college teachers became distorted during the golden age of higher education in the post-war years of WW II when research funds flowed freely, and graduate schools and the future faculty members that they trained gave priority to research over teaching. The tight job market of the 1970s exacerbated the trend as second and third tier colleges — many of them former teachers' colleges — found that they could hire research PhDs from distinguished research universities to lend scholarly distinction to their institutions and research funds to their coffers. The criticism of the 1980s and the pronounced desire of the general public to return to the priority of the

education of undergraduates prompted the reexamination of the mission of colleges and the work of their faculties. The widespread acceptance of the Carnegie report suggests that rethinking the reward system for faculty is a timely response to the rising interest in the quality of teaching and learning.

So, I'd like to turn now to some thoughts about how the merger of these two powerful waves will affect us on campus. What happens on campus if the priority of the assessment movement shifts from doing assessment to using it to improve student learning? What happens if at the same time the rewards for faculty shift to include the recognition of broader forms of scholarship — most especially, the scholarship of teaching?

Let's start with the obvious, but often ignored, fact that the folks most directly able to actually do something to improve learning are teachers and students. Although assessment has many audiences, including legislators, accreditors, and the general public, in the final analysis, it is teachers and students, working together, who make the difference between mediocrity and excellence in learning.

Most institutions have worked conscientiously to get faculty involved in assessment and that is hard enough, but students are rarely involved after they provide the data for analysis. Students are usually considered the subjects of the assessment; rarely do we report the data back to them and attempt to involve them in the implementation. But I think that we must begin to include students as equal partners, sharing with faculty and administrators responsibility for the quality of learning. Students can easily be included in the entire assessment process, and there are two reasons why I think they must be:

First is the obvious one that we can't improve student learning without the active and intelligent participation of students themselves. But second, and equally important, is the fact that students as lifelong learners are going to have to assume more responsibility for the direction and quality of their own learning. It is already the case that for most of a student's learning life, we — the formal educational establishment — are not going to be directing where, when, or what they learn. Offhand, I can't think of a profession where lifelong learning is as critically important as it is in pharmacy. The half life of knowledge in medicine now — meaning the time it takes for half of the knowledge to become obsolete — is reputed to be about five years. I'm sure I don't need to tell you that anyone in the health professions must of necessity become a lifelong learner — or so we who are your customers and patients devoutly hope. If students of pharmacy are to become effective lifelong learners, they need to learn how to assess their own learning.

To date, teachers have assumed almost total responsibility for assessing student learning. But most teacher assessments tell students — often too little and too late — how they have done on a test or in a course, but not how they are doing as learners.

My colleague, Tom Angelo, and I have been working with college teachers from all kinds of colleges and from across the disciplines to develop some Classroom Assessment Techniques (CATs) that involve teachers and students in the direct assessment of classroom learning(4). The purpose of CA is to inform teachers how effectively they are teaching and students how effectively they are learning. Through CA, teachers get continuous feedback on what and how well students are learning what teachers hope they are teaching. And students are required, through a variety of

classroom assessment exercises, to monitor their learning, to reflect on it, and to take corrective action while there is still time left in the semester.

Let me give an example of CA's most famous CAT. It is called the Minute Paper, and it works like this: Shortly before the end of a class period, the instructor asks students to write brief answers to these two questions: (i) What is the most important thing that you learned in class today? and (ii) What is the main, unanswered question you leave class with today?

Like most CATs, the Minute Paper is a teaching tool as well as an assessment device. It requires students to stop and think about what they have learned, to synthesize and articulate an important piece of learning, to express themselves in writing, and to think actively about what they did not understand. In short, it engages students in evaluating their own learning. If students are told that the Minute Paper is going to be requested at the end of a given class session, they may ask themselves along the way what they are learning, and they tend to be more involved and more active in sorting out the major message. So, even if the instructor failed to learn something important about students' responses to the teaching of that class session, the Minute Paper would still be worthwhile for students, requiring them to reflect on their learning experience.

But teachers do learn a great deal from the feedback of the Minute Paper. Dick Light, the director of the Harvard Assessment Seminars, reported last month at the AAHE national assessment conference in Washington, DC that the Minute Paper is now used in more than 400 classes at Harvard. Indeed, the distinguished professor of statistics at Harvard, Fred Mosteller, made his own contribution to the legends of CATs by inventing a version of the Minute Paper that he calls the Muddiest Point — an invitation to send a message to the instructor that many struggling students of statistics would find hard to resist(5).

The Minute Paper is used, I think, first because it simple and easy to administer, but more fundamentally because it provides immediate feedback to both teachers and students about the learning that is taking place — or not taking place — in any given classroom while it is still fresh in everyone's mind. Feedback is probably the single most important ingredient in improvement, whether used by teachers to improve their teaching or students to improve their learning. Consider, for example, the role of feedback in learning a skill such as archery.

Imagine, if you will, a group of people who are trying to learn archery in a darkened room where both the target and feedback on hitting it are invisible. The archers are provided with the best and most sophisticated equipment that money can buy; they have one-on-one coaching from an expert teacher who is demonstrating effectively how to hold the bow, get the right tension in the string and place the arrow, and they have access to good library materials on the dynamics of flight and the arc of the trajectory. Despite all this quality education on the input side, it's pretty clear that they are not going to improve their performance until they get some feedback on whether they are hitting the target.

We don't pay a lot of attention right now to giving students feedback on their progress as learners. Throughout most of their school years, students get grades that tell them how they have done relative to their classmates. That sort of information is not useful feedback on their progress as learners, nor does it do anything to help students develop

the skills they need for self-assessment as lifelong learners. Classroom Assessment (CA) is a useful tool because it defines the target and provides useful feedback to students on their progress in hitting it.

So, if the improvement of learning is the priority for the 21st century — and I think it is — teachers and students need to be primary players in assessment, and they need to be able to use the results of the assessment to improve their own performance. Now, what is it that they need to know?

Returning to the archery analogy, they need to know what and where the target is, and they need prompt feedback on whether they are hitting it or not. CA can be targeted to provide feedback on whether students are accomplishing the goals that the teacher has in mind, but CA can also provide feedback on where student arrows are going astray. Are student arrows hitting the barn to the left of the target, the ground in front, or perhaps students are scattering arrows all over the place. If feedback from the Minute Paper tells a teacher that students have no idea what the major message of the class session was or if student perceptions are distressingly different from teaching intentions, then a teacher wants to know why. For that we need Classroom Research (CR).

When we first started our work, we used the terms Classroom Assessment and Classroom Research almost interchangeably, but we are now beginning to stress important distinctions between Classroom Assessment and Classroom Research. Classroom Assessment usually addresses the status quo or “what” questions of teaching and learning. What is going on in this class today? What did students learn from the day’s they fail to understand or what did they have further questions about?

Classroom Research, in contrast, attempts to answer questions having to do with understandings — the “why” and “how” questions about learning. Why did students respond as they did? Why did they hit the barn instead of the target? Why do they seem to have such foggy notions of where the target is? Broadly speaking, CR attempts to provide some insight into how students learn. It encourages teachers to use their classrooms as laboratories for the study of learning.

Few college teachers know much about the learning process. For the most part, they have only their own experience as learners to guide them. And for most who choose academic life, learning has come easily. Almost by definition, academics find learning enjoyable, and they are successful at it. Such is not the case for many of today’s students. The access revolution brought thousands of students into college classrooms who find academic learning difficult and threatening. If we in higher education are serious about taking responsibility for maximizing student learning, then teachers are going to have to know more about how the students in their own classrooms learn. And one way to do that is to carefully and systematically observe their own students in the process of learning the particular subject matter that the teacher is trying to teach.

The need for CR is clear. Not so clear yet is whether faculty will be rewarded in promotion and tenure decisions for doing CR. But appropriate rewards for engaging in the scholarship of teaching are on the horizon now, and interest in redefining the roles and rewards for faculty is developing on several fronts. The Higher Education Pew Roundtables recently convened 120 campus discussion groups, involving more than 3600 faculty, administrators, students, and trust-

ees to talk about the changes that are on the way. A theme that was especially prominent in some of the most elite campuses in the land was the need to rethink faculty roles and rewards. This theme surfaced in the priorities of 88 percent of the research universities and 56 percent of the liberal arts colleges(6)

Also approaching the problem of the redefinition of faculty rewards is the national Forum on Faculty Roles and Rewards, a special program of the American Association for Higher Education working with faculty leaders, senior academic administrators, trustees, legislators, and others interested in refocusing faculty priorities on institutional and societal needs.

These national efforts are appearing as we close out this century as a result of considerable dissatisfaction inside and outside of higher education with the rewards given for good teaching. I have already discussed the external pressures that have been building for several decades. But it appears that dissatisfaction among faculty themselves is also substantial. The Carnegie survey of more than 5,000 faculty members showed that a majority of faculty said that teaching should be the primary criterion for promotion(7) and that better ways, besides publications, should be used to evaluate scholarly performance(8). Moreover, 70 percent of the faculty in higher education say that they are more interested in teaching than in research(9). Given the combined pressures from inside and outside higher education, it is no wonder that there is so much interest in redefining the roles and rewards for faculty. CR offers an opportunity to encourage and recognize scholarly interests related to teaching.

Faculty engaging in CR have much to contribute to our growing knowledge about human learning. There is an urgent need for research on teaching and learning in the disciplines. Lee Shulman(10) of Stanford claims that there is a blind spot in most of the current research on teaching with respect to the importance of subject matter content. Teaching English at the college level is clearly different from teaching math, which is different from teaching pharmacy. In fact, in our own research on teaching goals(4), we found that faculty teaching priorities are related more to academic discipline than to any other factor. Teachers of a given discipline — whether male or female, full-time or part-time, experienced or inexperienced, teaching in a public community college or a private four-year college — share a value system with respect to teaching goals that is distinctively discipline-related and significantly different from that of colleagues in other disciplines.

While there are many characteristics that good college teachers share in common, and teachers can and should learn those generic teaching skills, it is quite clear that at the college level there is an enormous need for research on teaching in the disciplines. And no one is better qualified to do such research than college teachers who know their discipline and the problems in teaching it to undergraduates. By and large, the professions have recognized this, and (here are now more than 50 discipline-specific pedagogical journals such as *Physics Teacher*, *Teaching of Psychology Research in the Teaching of English*, *Journal of Nursing Education*, and the like(11), that form a realistic bridge to the new definitions of faculty roles, especially in non-research universities, which after all employ the overwhelming number of faculty members and educate more than 80 percent of the students in higher education(12).

I believe that as we close out this century, all the pressures and interests are converging to make teaching a scholarly profession. It is not such now. Most college teachers teach as they were taught without much knowledge about its impact on student learning. The question now is how can teachers learn more about learning? How can they engage in the kind of professional development that will lead directly to the improvement of learning?

CR encourages teachers to use their classrooms as laboratories for the study of learning. It differs in many ways from traditional research in or on classrooms. In the first place, it is not an add-on activity. It is embedded in the regular ongoing work of the class. Unlike research in the disciplines which often requires special equipment and easy access to research libraries and colleagues engaged in cutting-edge research, college teachers doing research on learning have everything they need to do first-rate research. Most important, they have easy access to a population of students that is already engaged in just what the researcher wishes to study — learning a discipline under the realistic conditions of the classroom.

At its best, CR involves students as collaborators rather than subjects in the research. Knowledge about human learning, especially their own, is of high value and high interest to students. They are eager collaborators and the payoff for them is great in that they gain insight into their own learning while also developing the academic skills of inquiry and analysis.

Most importantly, CR differs from traditional educational research by completing the cycle from formulating the question to making changes in the practice of teaching. The typical pattern in traditional educational research has been for the investigator to do a research project, write up the findings, and publish them along with recommendations for someone else to carry out. This has been a notoriously ineffective design for the improvement of teaching and learning. Teachers are far too busy to read reports of research that seem to result in equivocal findings that may or may not apply to their students or their classrooms. One of the primary advantages of CR is that it is, by definition, relevant. It calls for the invention of a research question that the teacher finds interesting and important. And it is conducted in the relevant classroom, with the relevant students, in the relevant discipline. Let me give an example of a CR project cycle.

This example might start with an assessment using a CAT known as the Diagnostic Learning Log. It asks students, usually as part of a homework assignment, to analyze their own learning process by answering a few questions such as these about the homework assignment:

1. Briefly describe the assignment you just completed. What do you think was the purpose of this assignment?
2. Give an example of one or two of your most successful responses. Explain what you did that made them successful.
3. Provide an example of where you made an error or where your responses were less complete. Why were these items incorrect or less successful?
4. What can you do differently when preparing next week's assignment? (13)

The teacher might then prepare a tabulation of the responses, and together teacher and students would analyze the data. How well was the purpose of the assignment

understood? Where did misunderstandings occur? What did students consider successful responses and why? Are there some common themes in the successful responses? Where were errors made? Are they common errors? To the extent that the assignment is typical or recurring, students will be interested in knowing how others are responding, and the project itself is both a learning experience and a descriptive study of the processes that are being used by students in the class.

Note that this design starts out fitting the definition of a traditional descriptive study; it tells how students responded to a brief questionnaire about a given assignment. But instead of stopping with the tabulation of the data — for example, 42 percent of the students misunderstood question 3-CR gives both teacher and students an opportunity to analyze the learning process. Interested and creative teachers will almost certainly find any number of questions and hypotheses for further investigation.

Consider, for example, the rich research possibilities involved in relatively simple data such as student responses to the question, "What do you think the purpose of the assignment is?" It is my guess that an insightful analysis of students' answers to that question would reveal considerable disparity. Some students would no doubt think the purpose of the assignment was to find the answer or to reproduce the information given in the assignment. Other students might think it was to understand a relationship or to critique an argument. Such observations tie into some interesting research being done in the U.K., primarily England and Australia, right now on deep versus surface learning. Surface learning refers to learners' attempts to reproduce information provided by others (often with the least possible effort), whereas a deep approach to learning refers to learners' attempts to understand and apply new information. I confess that I have been lurking on the internet this summer, as teachers from a wide variety of colleges across an array of disciplines trade insights, observations, and references about deep versus surface learning. The conversations are lively, and the questions these classroom teachers raise and the observations they make about their own teaching experiences furnish ample grist for any number of interesting research projects. Sharing information and insights via publications or the internet is itself a short-term reward, but in carrying out a relatively simple CR exercise, both teacher and students are engaging in the type of learning analysis that has long-term benefits. Research shows clearly that people who are aware of themselves as learners, that is who can watch themselves in the process of learning and analyze their responses, are better learners than those who are less aware of how they learn.

Another source of useful information that is free to Classroom Researchers — and rarely available to professional researchers — comes to office hours in the form of students with questions. Our usual response as teachers, is to find out what they need explained and set about explaining it — often in the same way that did not work in the assignment or lecture. But that is the response of the teacher. The response of the researcher is different. The researcher is more likely to listen than to talk — to probe for insights about learning, to try to understand where the "disconnect" is between the presentation and the student's understanding. Sometimes, given half a chance to analyze their own learning, a student will be remarkably insightful and articulate about a learning problem. More often, the researcher

may need to launch some probing hypotheses, leading both researcher and student to a more analytical look at the learning process.

Fortunately in CR, an “N of one” may be more valuable than the N of hundreds needed to assure statistical significance in more traditional correlational research. An interview with a single student, or a focus group with a small number of students, or a discussion in a small class or seminar is more likely to result in an understanding of the process of learning than is a statistical study that may only tell us that certain things seem to be related. Worse yet, many traditional research studies are based on what Benjamin Bloom(14) has called “unalterable variables” —variables such as age, ethnic background, and gender, that educators can do nothing to change. Granted, we may need to adapt to non-traditional unalterable characteristics, but they are not very helpful in understanding learning as a process. Classroom Researchers are more interested in alterable variables, such as study strategies, teaching techniques, motivation, and other educational variables that can be changed by understanding and a willingness to learn about learning.

I hope that no one is interpreting these brief and simple examples of CR as constituting an amateur’s research. CR, if it is to be effective, requires the careful launching and testing of insightful hypotheses. Its primary requirement is that it should benefit the participants, namely teachers and students, but it should also be related to broader themes about learning, themes that exist in the literature on learning and in the experiences and experiments of teaching colleagues. While CR may or may not be published, it should be of a quality and interest worthy of credibility and other peoples’ attention.

And that brings me to some concluding comments about the CR community. Research is often considered a solitary activity taking academics out of the classroom to the lab or library to do their work in isolated splendor. While it is perfectly possible to do CR within the confines of one’s own classroom, we are finding that once faculty start down the road of CR. they are eager to share the experience with their colleagues. After all, teaching is one thing that faculty have in common. It is a paradox that teaching in higher education is such a strangely private affair. It is learned in private and for the most part practiced in private without much input or conversation with others engaged in the same activity.

CR provides a stimulus to forming a community around the mission that all colleges and universities share, and that is teaching. At the first level, there is the collaboration and discussion with students about learning, which is, after all, the common purpose shared by teachers and students. At

the next level, there is departmental and inter-departmental research about student learning, which is the common purpose of departments and divisions. At still another level, there is the community formed by the disciplines. I have already remarked that the disciplinary professions are newly engaged in the publication and sharing of information about teaching and pedagogy through specialized disciplinary journals and the internet. CR can only be enhanced by snaring both the investigations and the outcomes with students and teaching colleagues.

In conclusion, I believe that college teaching is a scholarly profession that will come into its own in the 21st century. The members of a profession are bound together through sharing a base of knowledge and experience that makes them qualified to exercise judgment and skill in the practice of their profession. Strangely missing from the profession of teaching as we close out this century, is the ability to advance the profession through a shared base of knowledge about human learning. CR has the potential for creating teaching/learning communities with the shared goal of understanding learning well enough to improve it — individually and collectively.

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