

CIRCLES, CYCLES, AND SPIRALS IN THE REFORM OF HIGHER EDUCATION

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Education reform movements tend to occur in cycles. A rising tide of interest in educational reform is inevitably followed by the ebb tide of indifference. In the half-century since World War II, educational reform has tended to be a short-cycle activity. We have had a number of nationwide alerts on the condition of education. In higher education, we have had the Truman Commission, followed by the Eisenhower Commission, which was followed by the Carnegie Commission, the Newman Reports, and the Carnegie Council on Policy Studies. Right now most of us have on our desks -- or we have already consigned to the shelf -- at least a dozen national reports, all purporting to know what is wrong with education, if not how to fix it.

Sustaining interest and enthusiasm in reform of any kind takes a lot of energy, and if the 1980's reforms run true to form, we will find our energies dissipated before we have accomplished our tasks. Nevertheless, cycles are an inevitable -- probably desirable -- aspect of reforms of all types. They provide times for rest and reflection alternating with times for action. The question that I want to address today is not how to avoid cycles altogether in our reform movements, but how to start new reforms from the crest rather than the nadir of the previous cycle.

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While cycles of reform can be useful and even refreshing, reforms that go around in circles can be exhausting and discouraging. The current educational reform movement, for example, is in danger of going in an assessment circle. You will remember that the report that sparked the current cycle of reform, "A Nation at Risk," was based on an assessment of student learning. The evidence marshalled seemed to show that this generation of students is less well-educated than previous generations, less well-educated than young people from competitive industrialized nations, and in any case less well-educated than they should be.

So far, the most vigorous and visible reaction to the assessments of student learning contained in the reform reports is a call for more and better assessment. That call has been answered by a dramatic response on the part of educators and legislators. If we are lucky -- or smart -- the assessment circle that characterizes the 1980's reform movement will turn into a reform spiral. There is some evidence already that the assessment circle is spinning in new and productive directions.

The assessment reported in "A Nation at Risk," was based largely on national data, and it showed some clear gaps and confusions in our data base. Then came the calls -- or were they demands? -- for more and better assessment. This was followed by legislative actions, with two-thirds of the states initiating assessment programs of some sort (Boyer, et. al., 1987). Most recently, the focus of assessment has shifted from the state house to the campus. Seventy-nine percent of the administrators polled by the ACE in the most recent Campus Trends survey said they expected some form of assessment to be introduced at their college in the next few years (Rossmann and El-Khawas, 1987).

Because the direction of motion with respect to assessment procedures is toward those who can actually use the results of assessment to improve instruction, the flat spin of the assessment circle may move toward a spiral of improvement. A spiral, in my definition, is a rising curve that moves around a central point, sometimes circling back to gain new perspectives, but always moving to a higher plane of understanding.

The idea in spiral reform movements is to keep our eyes on the central goal, gaining new perspectives and accumulating deeper understandings, without losing momentum and without retracing old ground. Not an easy task, but one made considerably easier if everyone can see the central point around which all of this movement is taking place.

At the present time, I think most people can see and identify the central point of educational reform quite well. There is high agreement that the point to which we are directing our attention is the improvement of student learning. Some people are viewing that point from higher on the spiral, with greater depth of understanding than others, but the goal is generally visible to all.

The question for us now is, how can we move the current reform efforts to a higher position on the spiral, and in so doing, bring fresh perspectives and new energy to the movement?

My first suggestion is that we add a new group of people whose perspectives on undergraduate learning will push us out of our ruts and add the depth of understanding we desperately need if we are to improve the quality of undergraduate education. That group consists of the teaching faculty. Ironically, classroom teachers are not much involved in this cycle of reform. In my imagery of the spiral staircase, they seem to be standing off to the side, watching assessors and administrators and

legislators scurry around in circles. Occasionally, someone on the spiral staircase or the circular plane tries to put teachers into the center of the spiral -- most often to focus attention on them as the central problem. But by and large, college teachers are spectators rather than participants in the 1980s reform of higher education.

New perspectives from cognitive psychology and educational research indicate the importance of disciplinary expertise in the study of teaching and learning. From his studies of teaching, Lee Shulman (1987, p. 15) concluded that "the knowledge base of teaching lies at the intersection of content and pedagogy, in the capacity of a teacher to transform the content knowledge he or she possesses into forces that are pedagogically powerful and yet adaptive to the variations in ability and background presented by the students." The only individuals who possess both content knowledge and knowledge of the learning backgrounds and capacities of students are classroom teachers. It is hard to see how we can expect any major, or even minor, improvement in teaching -- and therefore in learning -- without the involvement of classroom teachers in this reform movement. I'll return later to specific suggestions about how to involve classroom teachers in the reforms, but first let me add another observation.

I believe it is time to move ourselves to higher planes of understanding by trying some reforms that seem indicated by what we already know. At the moment, assessment is the only game in town. Almost everyone, it seems, is willing to gather more data, but at some point, we have to decide that the central problem is sufficiently illuminated by the shining of multiple sources of light on it. Then it is time to remind ourselves that we will lose energy and momentum and drop to the nadir of the cycle if we continue to go around in circles, collecting more data and

refining what we have. Some of us should be working toward solutions that can be inserted into the assessment programs before this energy cycle runs out. Assessment is not an end in itself. If it is to be effective, it should provide the link between where we are and where we want to be.

I start with the fundamental premise that the quality of student learning is directly -- although not exclusively -- dependent upon the quality of classroom teaching. For some reason, we in higher education have been reluctant to admit this. Yet if we believe in ourselves at all as teachers, we must think that how well we teach makes a difference in how well students learn.

Much of the controversy about the quality of teaching has swirled around the reward question, How can we reward good teaching? That is an important question, to be sure, but it is not the question I wish to address today. Most teachers, I am convinced, want to be good teachers; they work hard at their jobs, and they teach as well as they know how. The problem is that teaching is a learned skill, and most college teachers have never been given an opportunity to learn about teaching through any means except experience. How odd that we who believe so strongly in scholarship should consign the learning of our profession to experiential learning alone. In contrast with the major professions of medicine and law, education has been called a minor profession. In part, this is because we assume that people without any special training in the profession are qualified to practice it.

Another question about teaching that surfaces in every reform cycle, this one no less than any other, is how can we recruit and train good teachers? Professor Lee Shulman of Stanford (1987) is struck by the enormous power that today's college teachers have on future generations of

teachers. "Whether they like it or not," says Shulman, "because of the number of hours spent and the recency of the experience for future teachers, university and college teachers of subject matter are teacher educators. They are educating future teachers every time they represent their subject in a particular way, every time they either do or do not make the evaluations they conduct compatible with their goals for instruction, every time they represent the pedagogy in a particular way."

If this cycle of educational reform is to make an impact on the quality of undergraduate education, we will need to get inside today's classrooms to influence the teacher models that future generations of college teachers see everyday. It is not enough to give some attention to the training of graduate teaching assistants and hope that a few hours of instruction will mold new teaching behaviors. Unless and until we can excite today's college teachers about the intellectual challenge of pedagogy, we have little chance of making real change in future generations of college teachers.

It may be productive now to circle around the spiral to look at questions about college teaching from a new perspective. Freshly framed, the question is, How can we get discipline-oriented college teachers challenged by the profound questions involved in teaching and its impact on learning? How can college teachers learn to monitor their impact on student learning and thus improve their effectiveness as teachers? If we treat teachers as the professionals that they are, we should be looking for ways to stimulate their intellectual curiosity about how to teach for maximum learning.

My term for engaging teachers, as professionals in their own improvement, is Classroom Research. Classroom Research is designed to

make classroom teachers active investigators, using their classrooms as laboratories for the study of teaching and learning. It provides the missing link between the assessment of student learning and the improvement of instruction. The focus is on learning and how teaching influences it. The emphasis in Classroom Research is on feedback -- How can teachers, systematically throughout the semester, collect feedback on what students are learning in their classrooms? The purpose of Classroom Research is to inform the teacher what students are learning while there is still time to take corrective action, and in so doing to learn more about the relationship between teaching and learning.

Although many teachers will have their own ideas about how to design appropriate assessment measures, questions they wish to investigate, and the types of feedback measures that are most useful and helpful to them as teachers, others will appreciate some ideas about how to start in the unfamiliar terrain of Classroom Research.

In our new Classroom Research project, we plan to provide two tools -- first, a way to help teachers clarify their own teaching objectives, and second, a compendium of assessment techniques that can be used in the classroom to help teachers assess the extent to which students are achieving those objectives.

The basic premise of Classroom Research is that teachers are critically important to the quality of student learning, and must be directly and personally involved in this assessment movement. But there are four additional assumptions underlying the concept of Classroom Research that I'd like to make explicit.

1. The research most likely to improve teaching and learning is that conducted by teachers on questions they themselves have

formulated in response to problems or issues in their own teaching.

Teachers have been criticized for their failure to apply the findings of research to their teaching almost as often as researchers have been taken to task for failing to ask the research questions that are meaningful and useful to practitioners. For most of this century, the gap between research and practice has posed a major problem to funders of research in education. "Development" and "dissemination" have been the presumed answers, but the fact is that those two stalwarts of converting research in the laboratory into practice in the field have not worked as well in education as in agricultural extension, which is the model upon which "R & D" in education is based. The goal of Classroom Research is to reduce the distance between researchers and practitioners to zero. It is one way of assuring that the questions investigated by the researcher are meaningful and useful to the practitioner. Almost any question that the teacher wants information about can serve as the basis for Classroom Research. Let me give an example that was suggested to me last week.

After listening to me talk about Classroom Research, Bob McCabe, President of Miami-Dade Community College, came up, as he so often does, with a practical application for community colleges that would address a real problem. He observed that one of the major problems for teachers in community colleges is that students don't read the assignments before class.

Why, he asked, couldn't teachers generate a bank of items based on the reading assignment and then ask students to go to a computer on campus anytime during the week before a designated class session and respond to

five randomly-presented questions? The potential advantages of such a plan are many.

The teacher could receive a summary sheet before class and would know which concepts students found difficult -- and not so incidentally which students had done the assignment. Students would be placed on warning that doing the assignment was important. But even more important, the mini test would serve jointly as a diagnostic tool to show students what they didn't know and as a motivating device to gain the attention of students to class explanations of concepts they missed on the test.

The second assumption underlying Classroom Research is that:

2. Teachers need to make their goals and objectives explicit, and they need to get specific comprehensible feedback on the extent to which they are achieving those goals and objectives.

The two major products of the Classroom Research project that we are currently working on are the Teaching Goals Inventory (TGI) and a Handbook of Classroom Assessment Techniques. The Teaching Goals Inventory is a questionnaire that helps teachers clarify and establish priorities that are appropriate to their subject matter and their students. The TGI is currently in experimental stages, but ultimately our hope is to match assessment techniques to teaching goals. If, for example, a teacher wishes to improve the analytic skills of students, how would she measure whether she was moving toward that goal?

An early administration of the TGI at Miami-Dade Community College revealed, through cluster analysis, that the goals that teachers have for individual courses can be grouped into six clusters. The cluster of goals that most teachers endorse, regardless of the subject they teach, is one that we labeled "Cognitive Development." It consists of items such as

these: To help students apply principles and generalizations, develop analytic skills, synthesize materials, develop ability to think clearly, and other statements that have to do with helping students develop higher level cognitive skills.

A second cluster that was important to most teachers at Miami-Dade was one consisting of academic skills items -- developing reading, writing, speaking, and listening skills, and developing the motivation and self-discipline for lifelong learning.

Other clusters are interesting because they are valued by particular disciplines. Teachers of courses in the humanities were especially prone to attach value to goals such as these: To help students develop historical consciousness, appreciate the liberal arts, develop creative capacities, and tolerate intellectual ambiguity. Teachers of career and vocational subjects selected goals such as these for their course: To help students make good career decisions, plan ahead, be motivated toward accomplishment/achievement, and work collaboratively with others.

Interesting to me was the finding that at Miami-Dade, teachers of the social sciences were more interested than faculty in other disciplines in helping students develop a sense of personal responsibility, see the implications of their course for self-understanding, develop self-esteem, and grow in the capacity to respect and understand those from different backgrounds and cultures.

The TGI showed us that, across the college, Miami-Dade teachers are aiming for a wide variety of learning outcomes, and that teaching goals are related to subject matter taught. We used the TGI as a research tool to help us design appropriate assessment measures, but it might also be used by Classroom Researchers. Last week after I had presented some data

from the TGI to a group of outstanding researchers and scholars convened by PEW Charitable Trust to discuss how research might improve education, a professor from the University of Pennsylvania was motivated to reflect on his own teaching. He observed that one of his problems in teaching graduate students was that the goals he had for teaching a course did not match very well the goals of the students for taking the course. Why, he wondered, couldn't he use the TGI -- or an appropriately modified version -- to assess student learning goals and perhaps to launch a discussion of the discrepancies between teaching goals and learning goals for the course.

Once again, this illustrates the multiple potentials of Classroom Research to provide useful assessment information to the teacher, to develop a powerful teaching device -- in this case to make students aware of their learning goals, and to improve teaching -- in this case to reduce the discrepancy between teaching goals and learning goals.

We are trying, in our Classroom Research project, to develop a variety of assessment tools to address the variety in teaching goals. To that end, we have put together a Handbook of Classroom Assessment Techniques (Cross and Angelo, in press), which will be available to classroom teachers this spring. It will contain descriptions of approximately 30 feedback devices along with instructions about how to use them. One of our basic premises is that assessment and instruction must be intimately related. For many of the assessment devices described in the Handbook, it is going to be difficult to distinguish whether it is a "teaching tip" on how to accomplish some goal or a "feedback measure" of whether the goal has been accomplished. Good assessment devices are built into the teaching/learning process. The feedback devices described in the

Handbook should really be called teaching/assessment devices or assessment/teaching devices.

Let me give a few examples from the Handbook. I have selected these particular examples because they are easy to explain; you will need to read the Handbook to fully comprehend some of the more complex devices. Under the section in the Handbook dealing with feedback on "Academic Skills and Intellectual Development," we have described a device long used by journalists, but specifically applied to education by Anne Berthoff (1982). It is called the one-sentence summary of Who does What to Whom, How, When, Where and Why?

Basically, this assessment technique asks students to pick out the major points made in a class session, to "chunk" like concepts, and then to synthesize these concepts into a coherent whole. It is not an easy task as you will discover if you try to write a one-sentence summary of what you have learned today about Classroom Research. Had I told you at the start of this lecture that I was going to assess your learning by assigning this task, it's a good bet that you would have become actively involved in listening for answers to the questions, Who does What in Classroom Research, How, When, Where, and Why? One of the things we know from experience as well as from research is that students generally learn what they are going to be tested on. Thus, there is considerable merit in using assessment devices that teach and teaching procedures that assess.

We are also beginning to stress the power of student awareness of learning -- or metacognition, as it is called in research circles today. Cognitive psychology has made enormous progress over the past decade. When I was in graduate school the psychology of learning was dominated by B.F. Skinner and other behaviorists. In stimulus-response (S-R) theories

of learning, we studied in great detail the stimulus (what went in) and the response (what came out). What went on in between was summarized by the hyphen in S-R theories. Now cognitive psychologists are looking at the mental structures and processes that students go through in organizing and elaborating their learning.

One of the most obvious differences between successful and unsuccessful learners is that good students seek relationships among facts and concepts whereas poor students tend to view knowledge as sets of isolated facts and answers. (Long and Long, 1987). Good students, the research suggests, actively monitor what they know and they seek to find meaning through the use of strategies such as paraphrasing, integrating, and relating new learning to that which is already known. The one-sentence summary calls on students to integrate and paraphrase.

Clearly, not every lesson lends itself to a one-sentence summary. For some teachers and some subjects, the whole idea of such condensation would be quite offensive, for others, simply inappropriate. That is why we need to provide for different objectives and different forms of assessment. Lets take another illustration from the forthcoming Handbook.

This quite different, but equally simple, assessment strategy has had a high appeal to some of my Harvard colleagues (See Mosteller, 1987). It is called "Minute Papers" and was developed by a physicist at the University of California, (Wilson, 1986). In the last few minutes of the class period, this professor asks students to take out a piece of paper and write the answers to two questions: What is the most important thing you learned today? and What questions remain uppermost in your mind as we conclude this class session?

Once again this is a teaching technique as well as an assessment device. Students are going to have to think about what they did learn and what questions that raises in their minds.

Minute Papers have proved useful as assessment devices since the implications for improving teaching are immediate and clear. Some teachers have prepared handouts answering questions that a number of students had at the end of class; or a teacher may decide to review difficult concepts at the beginning of the next class period, or she may conclude that there is a better way to teach the concept, or that the level of the questions in students' minds could be raised by presenting the concept differently.

My intention today is not to describe the infinite possibilities for assessment strategies, but to try to give you some concrete examples of how classroom teachers can use relatively simple feedback devices to improve their teaching. A really good classroom assessment device is one that gives the teacher a window through which to view how students handle learning assignments. It is a teaching strategy as well as an assessment measure. The third operating assumption underlying Classroom Research is that:

3. Inquiry and intellectual challenge are powerful sources of motivation, growth, and renewal for college teachers, and Classroom Research can provide such challenge.

The editors of the September/October 1985 issue of Change magazine thought it timely to devote an entire issue to the discussion of the poor morale and lack of professional identity among college teachers in the 1980s. Proposed solutions are many, but one that worries me is the growing tendency to push faculty members toward greater identity with their

academic discipline through the singular path of research and publication in the discipline. After an intensive study of the professoriate at American colleges and universities, Howard Bowen and Jack Schuster (1985) expressed some dismay over the "veritable surge" toward a reward system that emphasizes publication and research productivity over teaching. They question whether the "stampede toward publishable research and scholarship, or what sometimes passes for scholarship, serves the nation's needs, or the longer-term interest of those campuses historically committed to effective teaching" (p. 16).

While a recent Carnegie survey showed that most faculty in every type of institution, except those in the research universities, agreed that teaching effectiveness, rather than publication should be the primary criterion for promotion, a majority of faculty (55%) also agreed that "it's very hard to get tenure in my department without publishing" (Chronicle for Higher Education, December 18, 1986, p. 27).

Unfortunately, it seems to me, some colleges and universities are trading in their reputations as first-rate teaching institutions for status as second-rate research universities. While it does not follow that good reserachers are poor teachers, neither do we have any evidence that research in the discipline improves undergraduate teaching.

The fact is that teachers cannot do everything well. Choices about where to spend one's time have to be made, and that choice should not have to be between something that is intellectually stimulating and that which is done for extrinsic status or reward.

Why shouldn't faculty in teaching institutions achieve professional identity and intellectual challenge through doing research and continuing to learn that which enhances their ability to achieve high levels of

competence in their chosen profession -- teaching? Classroom Research is an effort to develop knowledgeable, involved, highly competent teachers who achieve identity with their disciplinary colleagues across the nation through experimentation, discussion, and yes, when appropriate, publication on the art and science of teaching math or history or business management.

I believe that there should be informed conversation among the members of a department about teaching and the assessment of classroom learning. I think teachers can achieve recognition and intellectual challenge from exchanging knowledge and creative classroom research designs with others in their disciplines in other colleges. I believe that teachers should be actively recruited on the basis of their performance as teachers and their research on the teaching/learning process in their field of study. My fourth and final assumption is that:

4. There is nothing so esoteric, mysterious or fragile about Classroom Research that it cannot be entrusted to and done by anyone capable of and dedicated to college teaching.

The goals of classroom research differ from those of traditional educational research. Whereas educational researchers need to be highly trained in sampling theory, tests of significance, and the collection and management of frequently large pools of data, and/or in the increasingly specialized methods of qualitative research, the Classroom Researcher usually needs few of the specialized research methods that are required for generalizing findings. The purpose of the Classroom Researcher is not to define a "representative sample" nor to discover the "general laws" of learning, but to find out what a known group of students are learning as a result of a particular teacher's efforts. The questions to be answered by

Classroom Research are very specific -- What are my students learning in my classroom this semester?

The initial materials we are developing, the TGI and the Handbook on Classroom Assessment Techniques are designed just to get people started. Once started, we would hope that teachers would be creative and innovative in the design of their own assessments and in modifying their teaching in response to those assessments.

In conclusion, the purpose of my message today is to move us beyond the circles and cycles of educational reform, taking us one step up the spiral staircase to look at teaching and learning from a slightly different perspective. My hope is that through Classroom Research, college teachers will add their energy, perspective, and understanding to the improvement of student learning through more knowledgeable teaching.

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