


# Inspired College Teaching

A Career-Long Resource for  
Professional Growth

Maryellen Weimer

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## Implementing Change Successfully

Doing the reflection advocated in Chapter Two, soliciting feedback from students (à la Chapters Three and Four) and partnering with colleagues (Chapter Five) will likely result in identification of many potential instructional changes. This chapter is about successfully implementing them. Most of the time college teachers do not implement alterations systematically. For many, the Nike slogan, “Just do it!” captures the essence of their approach to change. Despite some grudging admiration for this determined, muscular approach to change, I believe that successful implementation requires something other than brute force. Choices about what to change and how to change, as well as decisions about implementation, assessment, and sustainability should be deliberate—the result of thoughtful analysis and careful planning. Change made on these terms stands a much better change of positively affecting the learning of students and the growth of instructors.

*Change*, broadly defined in this chapter, describes any way in which instruction is purposefully altered. Instruction can be changed by the addition, deletion, or revision of a new strategy or technique. The change may be minor, like the addition of a new activity used one day in one course, or major, like a whole new approach to teaching implemented across a set of courses. Change can involve how material is presented, the activities and assignments given students, or the policies used to manage the classroom

environment. The only changes not addressed here are curricular changes, what faculty teach. They are encompassed by the definition of change but depend on knowledge of the content.

Surprisingly, little research attention has been paid to the process of selecting and incorporating changes at the postsecondary level. Some work focuses on the spread of a particular innovation, like technology (Celsi and Wolfenbarger, 2002, for example). Interest in classroom assessment and classroom research has produced work that looks at how a change affects specified learning outcomes. Despite this related research, work that looks at the process of making changes has not yet addressed a number of pragmatic questions. For example, how many changes can an “average” teacher successfully incorporate at once? How long should a change be tried before it’s abandoned as untenable or diffused more widely? Is change needed more at some career stages than others? Are some kinds of changes easier than others to implement? Despite the lack of empirical evidence, teachers need to be thinking about how they would answer these important questions. What lessons about change have you learned from experience?

As noted in principle 5, faculty are the only ones who can implement changes in their teaching. The process described in this chapter can be used without the assistance of others. Often faculty do make changes without the involvement of others. However, others, be they colleagues, mentors, or teaching professionals (say staff from a teaching center) can increase the motivation to change and the likelihood of success and make the process a richer experience. Others may have tried something similar and have relevant experiences. They may be able to offer a different perspective or an explanation why something did or did not go as planned. Faculty do tend to be autonomous, independent learners—many are not particularly collaborative, especially about their growth and development as teachers, despite the benefits explored in Chapter Five. I don’t rule out individual ways of learning, but for anyone who hasn’t collaborated over a teaching project,

implementing a change is a great place to experience firsthand how helpful others can be.

The systematic process of incorporating change outlined in this chapter involves decisions in five areas: (1) deciding what to change; (2) how much to change; (3) how to make the change work given the teacher, the students, the content, and the instructional setting; (4) how to assess the effectiveness of the change; and finally (5) deciding if the change should be continued and maybe used more broadly. These decisions may look straightforward, but making changes that help students learn at the same time as teachers grow goes way beyond the “just do it” approach to change.

## What to Change

Typically faculty think about what to change when some aspect of instruction isn’t working well. This is the orientation to improvement based on premises of remediation and deficiency objected to in principle 1. Maybe student rating data has indicated there’s a problem, maybe a colleague observer has pointed it out, or maybe the you have assessed the situation and decided that something needs to change. Problems do emerge in teaching, and they merit fixing, but this should not be the only motivation to change.

A more systematic approach to change alters how teachers discover what to change in a couple of ways. First, undertaking the kind of reflective analysis described in Chapter Two in all likelihood will reveal a number of potential areas for change. Chapters Four and Five propose ways of soliciting descriptive, diagnostic feedback from students and colleagues. They will also generate places where change might benefit students and the teacher. Both reflection and feedback may reveal changes not previously considered.

Perhaps this sounds frightening—maybe there are all sorts of aspects of my instruction I thought were working well and they

aren't. This fear rises from those premises of remediation and deficiency. It isn't always a case of something not working; it is more often a case of something that's fine but a few changes would make it work even better. And not to be forgotten is how this orientation to change includes discovering what is working well and considering how it might be infused in other aspects of instruction.

Sometimes deciding what to change happens more or less accidentally. I see this in workshops. The presenter or a participant offers a new idea for debriefing essay exams and the light goes on. Pens are picked up, heads nod, and people look pleased. It is clear that the idea resonated, even though those attending were not there because they thought they needed to change how they debrief essay exams. In this case the good idea itself identifies the aspect of practice where a change might positively affect efforts to learn.

Another mistake that faculty frequently make at this first decision point is quickly moving past what to change and deciding how to change it. They don't consider a range of possibilities. I wouldn't rule out happening on a good idea and using it, but in general making good change choices depends on having considered a number of different possibilities before selecting one. More on this subsequently, but as a rule it's better to separate deciding what to change from how to change it.

## How Much to Change

Once faculty find the motivation to change, they tend to identify a whole collection of things they'd like to do differently. I sometimes worry a bit about workshops, seminars, retreats, and conferences for this reason. They function a bit like the revival services I attended in my youth. Attendees are convicted, presented with redemptive ideas, and then converted to a new instructional life. They leave inspired and enter their classrooms changed teachers, doing all sorts of things differently, only to discover how slowly

old habits die. Extensive behavior change is as difficult to sustain in the classroom as it is elsewhere.

How many changes can a teacher implement all at once or in the same course? Thoughtful, systematic changes take more time to plan, prepare, and assess. That prescribes less, rather than more, change. Because extensive change is difficult to sustain, iterative approaches tend to work better, even though much about the teaching may merit changing. Significant, transformative change may be the ultimate goal, but the journey there should be deliberate and carefully paced. My own midcareer transformation from teacher- to learner-centered approaches took the better part of ten years.

On the other hand, for those serious cases of course or instructor doldrums, instructional shock treatment should not be ruled out. Taking a course (or instructor) apart should not be undertaken on a whim or over spring break. However, with proper planning and enough time, a total revamp can effectively reorient the entire instructional world. I have participated in some summer "boot camp" programs—one to which faculty brought a course, preferably an old, tired one. The goal of the program was a complete course redesign—basically to change everything. Most of the faculty I worked with found the experience rejuvenating. They left with fresh perspectives on the course and a new found motivation to teach it. There's also that old apocryphal tale (perhaps it's an urban legend now) of the professor whose lecture notes burned in a fire, and without them he found his way to lecture stardom.

It may be that the how much to change question is best answered individually, given how variable individual teachers and teaching situations are. It also may be that the question is better answered at the end of this chapter, once these more systematic ways of change **have been** fully laid out. But it's not a question to ignore, especially **given the propensity** of many faculty to try to do too much too **fast**. **New instructional** ideas are not like fish. They

can be kept in a file folder for years and still not smell. Now they don't want to fossilize in that folder, but they can be kept there until there's more time, motivation, or need.

### How to Change: Does It Fit?

Having identified what to change, it's time for decisions about how to change. Should you stop doing something? If so, what should be done in its place? Should you revise something? Should you add something new?

How do you come up with the list of possibilities? Start with a list of options you can generate. Beyond that, there are colleagues who can be consulted, professionals in the teaching center, maybe even students. My recommendation (probably now recognized as this book's theme song) would be to look for options in the pedagogical literature. It abounds with ideas, strategies, techniques, different approaches—many of them already classroom tested. It is a wonderfully applied and pragmatic literature, and resources are not difficult to find.

However you generate a collection of possibilities, doing so invigorates the process. It allows you to consider important issues like whether the change fits. Will it work, given parameters that include who you are and how you teach, who you teach, what you teach, and finally where you teach. Each of these instructional realities merits further delineation.

Teachers do know, often on a gut or intuitive level, what they can and cannot pull off in the classroom. They tend to select those changes that already fit comfortably with who they are and how they teach. These comfortable changes are not inherently bad. If they are the best way to improve student learning, they are the obvious choice. For someone new to teaching or change, they are a good place to start. If teaching needs a quick fix, these tend to be the changes easiest to implement. For those semesters filled to overflowing with personal and professional obligations, changes

that fit comfortably with who we are and how we teach can be implemented more efficiently. Moreover, these kind of changes improve teaching—they develop pedagogical prowess and improve learning outcomes.

But what's at issue in this book is something larger—how change can contribute to instructional growth across the career. A good change choice has something in it for the teacher as well as for the students. Some changes should change the teacher, not just what the teacher does or what happens in class; they should take teachers to new levels of instructional maturity. For growth directed toward all that a teacher can become and for vibrancy that spans decades, sometimes the choice of how to change should be uncomfortable, risky, even bone-rattling.

Drawing on my love of racing, I get after my students for only running caution laps. They're out there on the track. They have these awesome intellectual motors, but they won't put the pedal to the metal. They're afraid to run flat out. I see a lot of teachers running caution laps, too. They may weave a bit from side to side to keep those tires warm and look competitive, but it's been years since they've put what they've got to the test. Yes, it is dangerous. Even very good drivers slide up the track, spin around and hit other cars, but most of the time they don't wreck. They fly around the track with exquisite precision, pull off impossible passes, block those behind, and leave us fans positively breathless. Adrenalin-pumping excitement happens at the race track. Classrooms are equally exciting venues, but not if everybody putters around at safe speeds, telling themselves (and maybe others), about all those daring moves they could theoretically make.

Robert E. Quinn argues (in an interview with Anding, 2005) that every person and organization faces a continuing, core dilemma of deep change or death. It's the old law of entropy. "The problem is that I do not want to make deep change. Making deep change means letting go of control. I can think of no more terrifying thing to do. So I design my life to be comfortable. . . . As leaders and

teachers, we need to learn how to choose to make deep change; if we do, we become empowered and empowering to our students” (p. 489).

But it doesn't always have to be an all-or-nothing decision. How something is changed can be placed on a continuum with lots of points between comfortable and risky. But the amount of risk is determined at the point when a teacher makes that how-to-change decision. It's another good reason for collecting options and then choosing among a number of alternatives. With a group of options laid out, a teacher can check off those alterations that look best and cross off those that look worst. Before the decision is finalized, the alternatives should be reviewed once more, especially those crossed-off items. Maybe they're just not very good options, or maybe it's that wise internal sense that the option just doesn't fit, but maybe they're off the list because they aren't like anything you've ever done before. They don't fit comfortably with how you teach, but they could be just what's needed to realize more of your instructional potential.

Fit then, begins with the recognition of who you are and how you teach (both discovered via the mechanisms proposed in Chapter Two), but it also involves recognizing that risk plays a role in long-term growth. Both comfortable and risky changes are viable choices, but always opting for the comfortable makes teaching less of an adventure. If some first-person accounts of the power of risky changes to grow teachers might be persuasive, I recommend these: Black (1993), Noel (2004), Singham (2005 and 2007), and Gregory (2005).

Deciding whether a change will fit, as in work well, also includes understanding who we teach—our students and what learning needs they bring to the classroom. Sometimes we opt for changes that suit us but do not fit our students. Early in my efforts to become more learner centered, I designed a very open-ended learning log assignment. I wanted students to take the content to whatever places they found meaningful. They could write about

course content they observed at work, at home, in church, among friends. They could write about the reading. They could raise questions, propose answers, offer opinions, draw pictures, write poetry. I loved the assignment and was frustrated beyond measure by the endless stream of students who kept asking, “What do you want me to write about?” “I don't understand what you want in this assignment.” Slowly I realized that for beginning students, who need structure, who think that every question has a right answer, the assignment was just too open-ended. It assumed a level of intellectual maturity these beginning students did not yet possess.

What we teach should also influence the how-to change choice. How the content is organized in a discipline, what counts as evidence, how questions are framed, the rules of critique, the methods used to advance knowledge, all of these and more affect whether or not a particular change fits and will work. Beyond content, what we teach includes issues related to instructional setting. If what we teach are large courses, writing activities that generate mountains of grading work for the instructor are not viable no matter how well they fit the writing needs of students. A complicated algorithm for forming groups might work well in a class of twenty but it could take the whole period to execute in a class of two hundred.

The change choice that fits must work well for each variable in the equation. It's like a puzzle piece that must connect with other pieces on all sides. It's no good if it works for the teacher but not the students or fits the content but doesn't help students learn. One of my saddest consulting experiences involved a biology professor about whom complaints were numerous. I tried to get him to let me come and observe in his class. He clearly didn't want that. In an attempt to try and understand how he oriented to teaching, I asked him to tell me about a teacher he admired. “Professor Kingsfield in *The Paper Chase*. That guy could really ask questions that handled students.” I wasn't sure exactly what he

meant by “handled students,” but as the conversation continued it became clear that he prized a kind of rough and tumble intellectual exchange with students. He wanted to be the lightning rod that diffused great bolts of intellectual energy. I never did discover if he had the razor sharp intellect needed to pull off these kinds of exchanges, but I knew for a fact that he did not have students ready for that kind of intellectual sparring. He taught introductory, survey courses at an institution with something very close to open admissions.

*Fit* in its very largest sense is about where we teach and whether that’s the place we belong, given who we are and those tenets of education we hold dear. Those who believe that only the intellectually capable should come to college will find it difficult to thrive, perhaps even survive, at an open admissions institution. Tendencies toward burnout increase manyfold when faculty with penthouse philosophies find themselves living in rent controlled co-ops. A wonderful collection of essays (Murphy, 2008) describes the firsthand experiences of faculty who ended up getting jobs at institutions not like those where they wanted to teach and sometimes in places not where they wanted to live. Some made peace with those places; others moved on. Reading the accounts of their experiences makes clear how important the issue of institutional fit is when the goal is instructional vitality across the career.

Most instructional changes can be adapted in ways that make them fit, as the next section of the chapter explains. But some changes don’t fit and can’t be made to fit. If you wear a size 14, you aren’t going to find your way into a size 2. Most of us know better than to try, but efforts expended trying to make something fit that doesn’t result in frustration and despair. On the other hand, some of us wear the same instructional clothes for years. This section has been a call to choose something new, something you wouldn’t normally wear, maybe even something a bit on the wild side. It could fit and look smashing.

## How to Change: Will Adaptations Make It Fit?

With instructional changes, as with most everything else in life, rarely do things fit perfectly. They must be made to fit so that they will work given the peculiarities of individual teaching situations. I believe what separates teachers who successfully implement change from those who don’t is that those who are successful adapt the change. They select a change and promptly proceed to change it. They make a set of modifications (sometimes slight, sometimes not) so the new assignment, strategy, policy, or whatever works given the content, the course, and their students. Less successful are those teachers who try to replicate the change—the ones who just do it.

Teachers who adjust new strategies, policies, or practices often do so intuitively. If asked, they cannot say how they knew some aspect of the new approach needed to be changed and or why they selected one set of modifications over another. However, this intuitive knowledge is not some “mystical sixth sense” or “paranormal power.” So observe Burke and Sadler-Smith (2006) in an excellent discussion of how teachers use intuition to assess and respond to unfolding classroom events. “The individual’s accumulated experience interacts with the context to determine classroom actions” (p. 172). “Put another way, instructors have cognitive schemas or mental models born of experience that they can overlay on particular instructional problems to detect a timely solution” (p. 172). I suspect the faculty who successfully adapt a change use a similar kind of experiential overlay to determine what needs adjustment. Burke and Sadler-Smith (2006) do point out, however, that even though all teachers learn from experience, that does not guarantee the accuracy of those lessons learned. So, if teachers develop a pattern of implementing new ideas exactly as they were received, they may not develop the ability to make the adjustments needed to ensure that a new approach will work in their unique instructional setting.

Just as with fit, adaptation may need to be made so that the strategy works better for the teacher. Humor is an excellent example. Research consistently reports that the presence of humor benefits the climate for learning in class (for an excellent summary of this research, see Korobkin, 1988). But what if a professor is (like quite a few are) pretty much humorless? Even after quaffing ale he tells jokes that engender nothing beyond polite smiles. That instructor should not try telling jokes in class. Rather, he must explore a range options, like those listed in Wanzer, Frymier, Wojtaszczyk, and Smith (2006): funny stories, dry wit, maybe puns, or cartoons and comics. Perhaps it's self-deprecating humor—the ability to laugh at one's own mistakes. Or maybe it's making the most of unexpected happenings.

Several years back I had a class do very poorly on an exam. I was disappointed and felt they were without excuse. After passing back the exam, I lectured them—they needed to start taking the course seriously, they needed stop going over the text and get into it, they had to start asking questions when they didn't understand. In fact, their performance on that exam was so shaky I had decided to make one of the essay questions into a short paper assignment. The silence was stony as I returned to podium, gathered my notes, and was about to start lecturing. At that moment the lights went out. As it happened, this class met in a windowless room. From the back of that very dark room a voice announced, "I don't think God wanted you to do that to us." As a class we made jokes about what God did and didn't want us to do for the rest of the semester.

Adaptations can also take a good change choice and make it work for students. I didn't give up on my learning log assignment. I changed it—a couple of different ways, actually, before finding something that worked for students and achieved the learning goals I was after. I gradually eased students into those decisions about what they should write about. In the beginning, I provided

the questions and told them they should write a paragraph response for each one. They knew exactly what they were supposed to write about. Then I gave them some log entries with multiple questions; they were to select the two or three they wanted to answer. Then came a set of log entries with topic areas designated; only now students had to generate questions and answers. Then came logs with multiple topics, and finally came the log entries that said, "Identify an area, generate some questions, and write responses."

Making adjustments so that a change works given the content being taught also greatly enhances the effectiveness of a change. The Writing Across the Curriculum movement provides a great example. That movement has encouraged faculty across fields to have students write more, and it has spawned any number of inventive ways of using writing beyond the traditional essay and term paper projects. Faculty in disciplines where writing is not a skill needed to master the material, like mechanical and aerospace engineering, have incorporated some of these approaches, but not before adapting them. For an excellent example, see Maharaj and Banta (2000). They developed a log assignment for which students write chapter summaries, develop analogies, offer explanations, and solve word problems in an engineering statics course. For an entirely different but equally effective version of a log assignment, see how Varner and Peck (2003) use it in an MBA program with adult learners.

Finally, adaptations can occur given the instructional situation. The wonderful minute paper feedback mechanism whereby students respond to what has transpired in class can be used with 500 students. Instructors who use it in large classes have learned that they don't have to read all 500 to get a pretty clear idea of what might need more explanation.

Once a change choice has been made, preparing it for implementation involves a process of adapting it—changing the change so that it has the best chance of working when implemented in a

particular course with a certain kind of content, for learners with varied needs, and by teachers possessing different skills and abilities. The improvement equation is more complicated than it looks at the outset, but that just makes it the kind of challenging problem most faculty are keen to solve.

### Implementation: Efforts That Make It Work

With the change choice made and the change itself adapted, the time to execute has arrived and several issues merit attention, the first being when to do the change. Convinced of the merit of a particular change, a lot of faculty are motivated to try it out sooner rather than later—another verse of the just-do-it approach. It is better to pause and consider when this change would be most appropriate: this course or another; beginning, middle, or end of the semester; beginning, middle, or end of the period; before or after a major exam or assignment; with this content or some other. Changes can be attached to courses like iron on patches, but taking time to weave in the new approach so that it integrates and connects with the old—not only looks better—it's a repair likely to last a lot longer.

Related to the issue of when to implement a change is the matter of conditions. Changes should be implemented when conditions are most conducive to their success. This means not implementing before there's been time to prepare fully. It means implementing when there is enough time in the class or the course to be able to make the change without having to hurry through. It means implementing when the instructor can commit to the change wholeheartedly. It may be a risky change with an uncertain outcome, but the once decision has been made to take the risk, the teacher should implement it when it can be done in the best way possible. Consideration of conditions is another argument for not changing too many aspects of instruction at once. It's hard to give eight changes the full undivided attention each one deserves.

The advice here is pretty straightforward: if a change is worth trying, don't cut corners on the implementation.

### Deciding: Did It Work?

The absolute best time to decide whether a change worked is well before its implemented. Generating the criteria that will be used to assess the change should occur during the preparation process. That's the time to ask and answer questions like these: What is it students should learn from the activity, assignment, policy, or practice? How will that learning will be demonstrated? And, what assessment measures will best ascertain whether the desired learning has occurred? It may seem counterintuitive to be thinking about results before the change has been implemented, but the best time to decide what success will look like is before the event occurs. After the fact, what did happen is easily confused with what should have happened.

The absolute best way to decide whether a newly implemented change worked is to ask students. In fact a decision about the success or failure of any change should not be made without input from students. That feedback can be solicited and analyzed in a variety of different ways as seen in Chapter Five. But faculty also have a role in determining the effectiveness of something that has been changed. The purpose of this section is to explore constructive ways faculty can arrive at conclusions about the success of implemented changes.

One of the worst times (perhaps the absolute worst time) to attempt assessment is during the actual implementation of the change. This does not mean that feedback received then should be ignored. There may be a need to clarify, even to adjust, especially the first time through. But these on-the-spot assessments of how it's going should not become final judgments and overall conclusions, despite the natural inclination of faculty to make those sweeping assessments as the new activity unfolds.



Judgments at this juncture should be avoided for three reasons. First, whatever is being implemented deserves the full undivided attention of the teacher. Assessments, be they exultant or anguished, sidetrack teachers. Moreover, if you decide something is not going well, that may diminish confidence and any wavering of confidence at the front of the room is sure to be detected in other parts of the room. Second, teachers are more vulnerable when they try something new, especially if they are implementing a change outside the comfort zone. With vulnerability come feelings of anxiety, and the presence of anxiety makes feedback more difficult to decode accurately. Something may be going along just fine, but if the teacher is feeling a bit paranoid, he may see a whole different set of unfolding events. Third, faculty are not students, and they do not experience classroom events the same way students do. Even seasoned veterans who know their students well do not always accurately predict how students experience a particular event in class.

So, assessments of overall success or failure should not be made during implementation. And right after is not much better. You need to put some perspective around the event. However, the emotional investment in teaching, especially in changes, makes this recommendation very difficult to implement. Judging how well something went in class is an automatic response, so much like a reflex that it may be more sensible to consider it inevitable. However, those initial assessments should not stand without further analysis, including your own analysis arrived at reflectively (Chapter Two) and buttressed with formative, diagnostic feedback from students (Chapter Five).

I write having just experienced how wrong assessments made during and right after can be. I tried a new way of getting students to review their notes this week. I put five key terms on the board and wrote a question behind each. I gave students three minutes to find answers in their notes. In my second section (with less

well-prepared and motivated students) the room was quiet but for the sound of turning pages. “How about some answers?” Nothing. “Let’s start with question one? What date did we discuss norms?” Nothing. After two more tries, somebody said October 7. “Okay, let’s all go to that date. What have you got that might answer this question?” “Nothing,” said someone in the back. “Somebody else?” I could feel myself getting angry and losing patience. This review was for their benefit. Still nothing. Clearly the strategy wasn’t working. I decided to bail. “Okay, no interest in reviewing. Let’s go on to something else. But before we do, let me just say that I’m really glad I’m retiring at the end of this year.” Even that engendered no response.

I chewed myself up the rest of the day for my outburst and inability to get students engaged. I moved from a bad three or four minutes in class to deciding that whole class was going to hell in a handbasket and shortly thereafter to wondering if I might be able to retire midsemester. Then I opened my e-mail and found this note from Maria. “Maryellen, I’m sorry we didn’t answer that question in class today. But I think there was a problem with how you worded the question. Here’s what you wrote on the board, ‘Do norms have experience or culture?’ I don’t think people understood the question.” True enough, the question didn’t make any sense. Somebody (a student or maybe the teacher) should have asked about the question. The teacher could have more profitably inquired about the process rather than concluding that her approach wasn’t working and students were uncooperative. Even teachers with years in the trenches can come to a set of mistaken conclusions in a heartbeat—at least this one can.

Teachers have every right to judge how well something new has worked. Their initial impressions must be thoughtfully considered and their conclusions tested against feedback from students who also experienced the event firsthand but from a very different perspective.

## Sustaining Change: Deciding to Do It More

With something new, deciding to do it more entails two different decisions. The first involves determining if the change merits continued use and the second reckons with whether successful changes should be used more widely. Usually when something new is implemented, it is neither a smashing success nor dismal failure. Generally something works, sort of, and those mixed results spell out the need for further adjustments. It bears repeating: change works best when it's an iterative process. The metaphor that works for me is "tinkering"—the expectation of needing to keep fussing with something new and not to rule out the need to fuss further even when something does finally start to work well.

I have written elsewhere of my father who loved to tinker with his Oldsmobiles. He started driving them in 1937 and gave away his last one in 2006. When carburetors could still be adjusted, Dad always had his finely tuned. That motor make a miss and Dad would be under the hood before the rest of us were out of the garage. He kept detailed records of what he changed, regularly read repair manuals, and shopped carefully for new parts. He loved taking care of his cars, took pride in his work, and still brags that none of his Oldsmobiles ever ran less than 100,000 miles.

Aspects of teaching can also be modified continually. Old parts can be replaced with new ones or rebuilt. All parts should be regularly checked and adjusted when they need it. Deciding what to change for the next iteration can follow the process outlined here. First, using individual judgments, student feedback, and maybe a consultation with a colleague, teachers can determine what worked well and what did not. From the did-not-work-well list, two or three items can be selected and options for how they might be changed generated. Involving students at this junction can be invaluable. Sometimes they offer suggestions that may have never crossed the teacher's mind. Sometimes a small change will make a big difference; sometimes the alteration needs to be more

significant. And the circle continues. Once the next round of adaptations have been implemented, they should be assessed and refined further.

But at some point a change may need to be discarded. If the strategy for using online quizzes has been adapted, tried, assessed, refined, tried again, assessed, and changed again and the desired results are still not accruing, that approach to quizzing may need to be pitched, not permanently abandoned but not used in that type of course, with these kind of students at this point in a teacher's life. No shame—better to have tried and failed than never to have tried at all. Moreover, failure teaches just as much (sometimes more) than success. Isn't this the message regularly shared with students? How long to persist with a new approach, policy, or procedure is really an individual decision. Rather than persisting too long, most faculty abandon too soon, witnessed by the earlier example of someone who used group work once and concluded that it didn't work.

The opposite (and more pleasant) task involves considering whether a new approach can and should be diffused more widely in courses currently taught. Would it work in labs? With larger classes? For upper-division students? With other kinds of content? Overall fit is the first consideration and adaptation the second. Some ways of using online discussion just won't work with beginning students who've never been party to academic dialogue. But online discussion formats abound. There are many ways the strategy can be changed and adapted so that some kind of online exchange might be just the push to participate beginning students need. Deciding to do it more means assessing whether to continue as well as deciding where else the change might work successfully.

And so a process of change has been laid out. It need not be thought of as the "right," "only," or "best" way of implementing change. Sometimes faculty don't have time to take such a deliberate approach. Sometimes what isn't working and how it ought to

be fixed are obvious. If a teacher repetitiously pulls on her ear, that distracting behavior should be stopped—no need for thoughtful analysis, a range of options or assessment of outcomes. If this or some other approach to changes doesn't work for faculty, they should come up with a system for implementing change that does. Rather than adhering to the details of a particular process, faculty need to have a thoughtfully considered way of approaching change. Any reasoned and systematic approach makes efforts to change more likely to succeed. It should also increase the commitment to change and make instructional growth and development a positive and rewarding experience.