

*Research indicates that Classroom Assessment affects the experiences of both the teacher and the students.*

## Using Classroom Assessment to Change Both Teaching and Learning

*Mimi Steadman*

Those who have used Classroom Assessment over the past several years are confident about one thing: Classroom Assessment is good for both teachers and students. As a feedback strategy that provides teachers with data on teaching effectiveness and student comprehension, Classroom Assessment also involves students in active mental processing of new information and makes them more aware of themselves as learners. Classroom Assessment (Angelo and Cross, 1993; Cross and Angelo, 1988) is an educational innovation that unites efforts to improve both teaching and learning.

### **A Study of Classroom Assessment Techniques in Community Colleges**

For nearly ten years faculty have informally communicated the teaching and learning benefits of Classroom Assessment to their colleagues. *Classroom Assessment Techniques: A Handbook for College Teachers* (Angelo and Cross, 1993) contains several rich case studies that illustrate Classroom Assessment in practice, and Angelo (1991) compiled a number of reports on the successful implementation of Classroom Assessment in an earlier *New Directions for Teaching and Learning* volume. To complement the positive anecdotal reports on Classroom Assessment, a few formal studies have been conducted. For example, Catlin and Kalina (1993) addressed student retention and perception of classroom

---

*Note:* This research was supported through the practitioner-based research fellowship program of the National Center on Adult Learning, Empire State College, Saratoga Springs, New York.

environment, and found slight increases in retention and higher student reports of involvement, cohesiveness, satisfaction, and task understanding in courses where CATs were used. Cuevas (1991) followed up community college instructors who were enrolled in his course on Classroom Research, and found that the most frequent use of Classroom Assessment was for assessing teaching practice, while others used classroom assessment to develop and assess student learning skills. Diana Kelly conducted dissertation research on Classroom Assessment in which she trained community college faculty in Classroom Assessment and concluded that it “enhances faculty vitality and encourages greater interest and involvement in teaching” (1993, p. 198). Kelly also studied student involvement, but was unable to document statistically significant increases there. Nevertheless, open-ended student survey data revealed positive student feelings about learning progress and involvement.

In this chapter I summarize the results of a study (Steadman, 1994a, 1994b) on the implementation and impact of CATs in community colleges, where CATs have been especially popular and widely implemented. I was interested in building on earlier work by addressing both sides of the teaching and learning equation, looking at faculty *and* student experiences with Classroom Assessment. I sought out common threads in faculty and student self-reported experiences that could reveal why Classroom Assessment techniques were described in anecdotal reports as beneficial to student learning and satisfaction.

I investigated faculty and student experiences with Classroom Assessment in three ways. First, I explored how Classroom Assessment has been applied in practice by community college teachers, documented changes in teaching behaviors, and considered the costs and benefits of Classroom Assessment for teachers. Second, I explored the experiences and satisfaction of community college students in courses taught by teachers who incorporate Classroom Assessment activities. Finally, I investigated the potential of Classroom Assessment Techniques to promote student metacognition and the use of learning strategies.

## Methodology

For this project, I combined surveys, interviews, and observations of community college faculty and students. The research was conducted during the fall 1993 semester at three community colleges in Northern California with student populations diverse in terms of age, ethnicity, and academic preparation. There were four major components of the methodology: a survey of 136 faculty members from thirty-five California community colleges, selected from a directory of teachers involved in Classroom Assessment (56 responded for a response rate of 41 percent); interviews with 9 community college teachers using Classroom Assessment at three college sites; a beginning and end-of-semester (pre-test/post-test) survey of 164 community college students enrolled in classes taught by the 9 instructors in the faculty

interview sample; and interviews with 9 students from the student survey sample.

Student surveys included demographic items, questions about their satisfaction with the course, as well as items from selected scales on an instrument that measures students' use of learning strategies—the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, and McKeachie, 1991). Student responses from pre-test to post-test surveys were tracked by social security number so we could measure changes on learning strategies scores, and so that students could be provided with feedback on their responses to the pre-test survey along with suggestions for improving their study skills. Finally, the project included observations of classrooms and of meetings of Classroom Assessment groups (groups of faculty meeting for training in or collaboration on Classroom Assessment) at two colleges.

### **Research Findings: Classroom Assessment and Faculty Experience**

*Faculty purpose affects Classroom Assessment practice.* The faculty surveyed and interviewed in this research communicated thoughtful and goal-driven purposes for using Classroom Assessment in their efforts to improve teaching and learning. For example, when an ESL teacher wanted to encourage her most reticent students—some of whom were from cultures where the teacher is always right—to voice their opinions about the class, she administered a teacher-designed feedback form for them to complete anonymously. A composition teacher, confronted with a class with wide variations in preparation levels, administered a background knowledge probe to figure out how much review she would need to do at the beginning of the semester. A key finding of this study was that faculty purposes for using Classroom Assessment influenced how they implemented CATs, what subsequent changes they made in their teaching, and how they perceived the impact of this innovation.

The five most frequently mentioned purposes for using Classroom Assessment are summarized in the following list, along with illustrative quotes from open-ended survey and interview responses, to the question “Why do you use Classroom Assessment?”

An instructor's purpose for using Classroom Assessment was the engine that drove implementation choices. What faculty put into Classroom Assessment determined what they got out of it. And, the effort that faculty devoted to Classroom Assessment depended on their goals for using it. For example, some faculty devoted their implementation of CATs to gaining feedback on students' perceptions of instruction, using techniques that can be characterized as “customer survey” CATs. These teachers, who relied on CATs like the instructor-designed feedback form, reported that they gained valuable insights from students' reactions to instruction, and in many cases changed instructional approaches. One teacher compared CATs to trucks on the freeway with

<i>Purpose for Using Classroom Assessment</i>	<i>Sample Interview or Survey Responses</i>
To obtain feedback on the effectiveness of and student satisfaction with teaching and classroom activities	“Well, it does give me feedback that otherwise, when you’re up there all by yourself just doing your own thing, you don’t get. It allows you to see what you’re doing through the eyes of the people who are sitting there in class.”
To improve teaching	“Well, I think it really helps me, it makes me a better teacher, and I think it helps the students get more out of the class. So that’s my main motivation.”
To monitor students’ learning	“To check that the students are actually learning or retaining the material presented. Also to see if they are getting what I <i>think</i> I’m giving them.”
To improve students’ learning (in terms of retention or learning skills)	“Well, I use it for the reason it was intended—to improve their learning.”
To improve communication and collaboration with students	“It makes classrooms much more collaborative—students feel that they’re part of the act.”

bumper stickers that ask “How am I driving? Call 1-800-4-Safety.” She says, “That’s what I ask my students, ‘How am I doing? Here’s your CAT, let me know.’”

Other faculty used CATs like the minute paper or the one sentence summary (Angelo and Cross, 1993, p. 183) in an effort to monitor students’ understanding of new course content, and to provide students an opportunity to reflect on and synthesize new learning. These faculty more often reported that the use of CATs increased student involvement and student learning. Ideally, given Angelo and Cross’s intentions that CATs be learning as well as assessment activities, faculty will begin to tap into Classroom Assessment’s potential to enhance student learning in addition to providing feedback on instruction.

**Advantages of Classroom Assessment for Faculty.** The most frequently mentioned advantage of Classroom Assessment was the ability to *tune in to students’ voices* and as a result, having students who are more satisfied because they know their teachers care. One respondent commented: “Our students feel they

have a voice in the classroom. They feel that their instructor does care about their learning.” This first advantage of Classroom Assessment is closely related to the changes teachers reported making as a result of using the procedure, including assessing more and increasing collaboration and communication with students.

The second most frequently mentioned advantage was *the opportunity to engage in reflection on and systematic change of their teaching*. A faculty interviewee explained: “I feel that I have some power, in that I can really organize, orchestrate the class, and I know what techniques I can use. . . . So I’m not so much reacting anymore, I’m directing.” This advantage is especially meaningful to those teachers who reported improving teaching as their purpose for using Classroom Assessment, and corresponds to reported changes in classroom activities, teaching style, and presentation and review of new material.

A third advantage was *student improvement and involvement in learning*. One survey respondent wrote that “students are more likely to learn the material—that keeps them involved in the class.” I will return to a discussion of benefits to students later in this chapter.

The fourth major advantage of Classroom Assessment was *the opportunity to join a community of other faculty committed to teaching*. Although Classroom Assessment was originally designed so that it could be implemented in the privacy of one’s own classroom, without direction or evaluation from others, these teachers’ initial introduction to Classroom Assessment was through ongoing Classroom Assessment groups at their colleges. Interviewees credited Classroom Assessment for “making teaching a priority again” and described Classroom Assessment faculty groups as the only place in the college “where you ever discuss teaching.”

**Disadvantages of Classroom Assessment for Faculty.** In survey and interview data, only two disadvantages, time and negative feedback, were consistently reported, and several respondents left the disadvantage item blank. In Catlin and Kalina’s study (1993, p. 55), forty-five out of forty-six faculty reported that there were “absolutely no negative experiences” associated with their use of CATs. The main disadvantage of Classroom Assessment that emerged in this study was “so many CATs, so little time.” Respondents noted the time required for planning, administering, and analyzing CATs. In addition to the time required to administer a CAT, if teachers discover that students did not understand a particular lesson, additional class time may be required to review and clarify concepts.

The second disadvantage that faculty reported was dealing with negative feedback. One form that negative feedback can take is criticism of teaching in response to faculty requests for student comments on their satisfaction with teaching and classroom activities. Survey respondents warned that “one must be willing to take criticism” and “you might find out you are not teaching as well as you want.” Nevertheless, faculty concluded that the information gained from CATs was valuable, even when it was surprising or discouraging. As one teacher explained: “It’s good, because you would never have known it if you hadn’t done it.”

These findings highlight three key lessons:

*Classroom Assessment is an intrinsically rewarding activity for faculty.* Research has shown teaching to be an intrinsically motivating activity for community college faculty (Frase and Piland, 1989). One reason for Classroom Assessment's widespread appeal is that it capitalizes on teachers' existing motivation to teach as well as they can. The faculty in this study report that opportunities for learning, reflection, and improvement are highly motivating as well.

In this study, I was interested in what motivates faculty to adopt and implement an innovation like Classroom Assessment. The findings confirmed that Classroom Assessment is an instructional innovation that possesses several characteristics noted by Rogers (1983) and Kozma (1979) in their research on the adoption of innovations as contributing to rapid adoption rates. Perhaps the most important characteristic of a teaching innovation like Classroom Assessment that contributes to its adoption, continued use, and faculty satisfaction is that according to faculty reports, it is an intrinsically rewarding activity.

Faculty appreciated the feedback they received from Classroom Assessment, as well as the opportunity to try a variety of techniques depending on their skills and interests. Another aspect of Classroom Assessment's broad appeal was a result of instructors' ability to implement CATs according to their individual goals, interests, and time available for planning and analysis. What faculty perceived as benefits of Classroom Assessment match three attributes of intrinsically rewarding activities: task demands matching individuals' skill levels, range of challenges, and feedback (Csikszentmihalyi, 1982). The list of benefits of Classroom Assessment (the ability to tune in to student voices, improved student learning, opportunities for reflection and change, and a faculty community) supports the premise that faculty undertake certain instructional innovations because of the intrinsic rewards they derive from teaching and interacting with students (Kozma, 1979).

When I asked faculty what would motivate them to use Classroom Assessment more extensively or more often, they were especially interested in incentives such as release time to carry out significant Classroom Assessment projects, the opportunity to substitute Classroom Assessment for other committee or administrative responsibilities, and support to attend workshops and conferences. These incentives can be construed as either intrinsic or extrinsic rewards. For example, release time and substitution would be considered intrinsic rewards if faculty derive satisfaction from the opportunity to carry out additional or more elaborate Classroom Assessment activities. On the other hand, if the major satisfaction derived from release time or substitution of responsibilities is avoiding other work rather than enjoying Classroom Assessment itself, these motivating factors could be viewed as extrinsic. Faculty did not rate stipends, which are clearly extrinsic incentives, as highly motivating. But given increasing workloads and shrinking budgets, my hunch is that they probably would not refuse stipends, either.

One surprising finding, in light of community college faculty members' emphases on teaching and belief that they should be evaluated on their teach-

ing effectiveness (Carnegie Foundation for the Advancement of Teaching, 1989), was that 86 percent of faculty respondents indicated that they would be “somewhat” or a “great deal” motivated by the opportunity to publish results of their Classroom Assessment work. Most disciplines have a journal on pedagogy as a potential outlet for such articles.

*Classroom Assessment promotes reflective practice in teachers.* Classroom Assessment provided faculty the opportunity to reflect on their teaching and to make informed changes in instruction. Eighty-eight percent of faculty surveyed reported that they had made changes in their teaching behaviors as a result of Classroom Assessment. The four major categories of changes in teaching that emerged from faculty survey and interview data were assessing more or assessing at all, changing classroom activities or teaching style, modifying presentation and reviewing new material, and increasing communication and collaboration with students.

For some faculty, Classroom Assessment was the first time they had ever asked students for feedback, while other faculty said that they had always made an effort to assess learning, but used CATs to do so more frequently and more effectively. Changes in teaching style and classroom activities as a result of student feedback included speaking more slowly and writing on the board, as well as incorporating different activities such as group projects or student-generated test questions into their classes. Modifying presentation and review of new material was a change that resulted when teachers used CATs to monitor student learning and discovered that students were not learning what faculty thought they were teaching. Faculty also reported developing new formats for the organization, presentation, and review of course content. The final reported change in teaching was that teachers felt that they had opened lines of communication with students, and involved students more in the organization of the class.

Classroom Assessment, therefore, seems to have contributed to faculty's development as reflective practitioners (Schön, 1983) who engage in ongoing inquiry and discovery about their work as teachers. Echoing Schön's view that a reflective practitioner “engages in a continuing process of self-education” and that the “new satisfactions open to him are largely those of discovery” (p. 299), one teacher explained that Classroom Assessment provides “more challenge, more satisfaction,” and another added: “It makes me so much more conscious of what is going on.”

*Faculty value a teaching community.* The efforts of reflective practitioners, teachers in particular, are strengthened by the mutual support gained from working with one another (Schön, 1983). Eight out of the nine faculty at the three community colleges cited the opportunity for collegial interaction during meetings of Classroom Assessment groups with other faculty committed to teaching as a major reward of the practice. This supports Angelo and Cross's (1993) finding that collegiality was one of the most frequently cited benefits of Classroom Assessment. A psychology instructor commented that the Classroom Assessment group prevented “tunnel vision,” and a science instructor noted that changes in teaching resulted not only from feedback from CATs, but from

“hearing about how people deal with issues that are general to all courses across the disciplines.”

### **Research Findings: Classroom Assessment and Student Learning**

As with faculty effects, the research showed advantages and disadvantages for the students.

**Advantages of Classroom Assessment for Students.** According to faculty, a major benefit of Classroom Assessment to students is *increased control and voice in the classroom*. One faculty survey respondent wrote that “CATs provide students control of the class—a stake in the outcome.” Student survey responses supported the faculty perception that students had increased input in the classroom. Over 85 percent of the students surveyed believed that their instructors were “always” or “often” interested in hearing students’ concerns or suggestions about the class, and 84 percent indicated that their instructors always or often responded to student concerns and suggestions about the class. A related and very clear finding of this research is that Classroom Assessment increases student satisfaction.

Students responded positively—and with surprise in some cases—to the opportunity to voice their opinions and to help control the organization of the classroom. Students were especially appreciative when faculty made changes in their teaching or the classroom format based on student comments. As one student noted, “She asked you to write down what you liked most and least in the class, which I thought was very good, because she did make a couple of attempts to change her teaching style. . . . She actually started writing a few things on the board near the end. . . . I was impressed.”

A second benefit to students, reported by faculty, was that *students are more involved in their own learning* when teachers use Classroom Assessment. In one effort to measure levels of involvement, students were asked to rate how involved they felt in these classes as compared to other college classes. Close to 40 percent reported feeling “more” or “much more” involved in the classes that used Classroom Assessment.

A third advantage of Classroom Assessment to students is that *students benefit from improved teaching* because faculty use “feedback (from CATs) to improve instruction” and that the use of CATs conveys to students “that the instructor cares about them and wants to be effective.” When asked to rate their instructors, 64 percent rated their teachers as “above average” or “well above average” in effectiveness. In addition, over half of the students indicated that they were “more” or “much more” satisfied with the classes using CATs than with other classes at the college. Of course, it was not possible to conclude whether teachers are rated as above average because they use CATs, or if teachers who use CATs are highly effective to begin with, but in either case, students were highly satisfied with instruction in courses where teachers used Classroom Assessment.



The final major benefit to Classroom Assessment for students, as reported by faculty, was *increased metacognition and improved ability to monitor their own progress*. Faculty also believed that the use of several CATs forced students to synthesize their learning of new course content or to reflect on their study methods. However, student interview data indicated that students were unaware of teachers' efforts to teach them about learning along with course content. Thus it appeared that faculty were not explicit enough in their efforts to convey how CATs could help students improve their learning and develop new learning strategies. This will be discussed in more detail later.

**Disadvantages of Classroom Assessment for Students.** In survey and interview data from this study, I rarely found examples of disadvantages of Classroom Assessment for students. In response to an open-ended faculty survey question on this, 20 percent of respondents left the item blank, and nearly 40 percent wrote "none." Faculty reported only two disadvantages of Classroom Assessment to students. The first disadvantage, also mentioned as a disadvantage to faculty, was the *classroom time used and interruption caused by Classroom Assessment*. Faculty were also concerned that some students perceive Classroom Assessment activities as a waste of their time since they generally do not receive grades or course credit for their participation.

One survey respondent commented that Classroom Assessment does "take time away from the learning process, but it is time well spent." Other survey and interview responses, however, suggest that student participation in CATs is not separate from the "learning process"—it contributes to the learning process by encouraging students to reflect on course content and their own understanding of it.

The second disadvantage of Classroom Assessment for students is that it *requires active participation* on the part of students who may prefer to remain passive in the classroom. The ironic tone of faculty comments on forced student involvement—such as "they might feel forced to get involved, you can't sleep all the time"—suggested that students might find getting involved a disadvantage, but faculty believed that students would actually benefit.

Although I did not ask students a specific question about the disadvantages of Classroom Assessment to learners, an analysis of their responses to other questions about their classes and instructors did not yield any comments about wasted time, forced involvement, or any other disadvantages of CATs. The only negative student comments about Classroom Assessment were about teachers who didn't respond to student feedback, and in one instance, a teacher who "bites your head off" after receiving negative feedback on an assessment technique.

### **Using Classroom Assessment to Promote Metacognition and the Use of Learning Strategies**

As mentioned earlier, faculty reported that a key benefit of Classroom Assessment for students was improved metacognition and the ability to monitor their

own learning. To measure any beginning-to-end-of-semester changes in students' self-reported use of learning strategies, I used the Motivated Strategies for Learning Questionnaire (MSLQ), a modular instrument with a variety of scales that can be combined according to the needs of the researcher (Pintrich, Smith, Garcia, and McKeachie, 1991). The MSLQ scales used in the pre- and post-test student surveys for this research were Rehearsal Strategies (study techniques for memorization), Elaboration Strategies (study techniques such as paraphrasing and making connections to existing knowledge), Organization Strategies (study techniques such as outlining and determining main points), Metacognitive Strategies (students' reflection on their own learning), and Peer Learning (how often students work with others).

Pre- to post-test scores for the student sample increased on the rehearsal and peer learning scales, but the changes were negligible for all other scales. The only statistically significant difference was found for the rehearsal strategies scale. One possible explanation for the significant increase in student scores on the rehearsal scales is that the survey was administered just before final exams. If exam format requires memorization, then it is logical that students would be using rehearsal strategies. The absence of statistically significant changes for four of the five learning strategy scales could mean that the MSLQ instrument may not be sensitive enough to reflect changes over this short time span, or simply that students did not increase their use of learning strategies during the semester.

The key lesson learned from interview, survey, and MSLQ data is to *be explicit when using CATs to promote student learning*. Helping students learn how to learn requires extra effort on the part of faculty. Teachers may wish to use CATs as a pedagogical tool to embed learning skills instruction into their teaching of course content.

Are faculty currently using Classroom Assessment as a tool to promote student learning skills? In this study, faculty reported that they believed that the activity of participating in CATs and getting feedback from CAT results in itself makes students aware of their learning behaviors and helps them monitor their progress. Based on interviews and classroom observations, it appears that faculty did use CATs such as documented problem set solutions (Angelo and Cross, 1993, p. 222) and student-generated test questions (p. 240) in an effort to help students improve their learning skills by requiring them to monitor, synthesize, organize, and reflect on new material. However, according to interviews with students, faculty did not clarify how the learning behaviors used in CATs could be transferred to other learning and study situations. Consequently, teachers' efforts to improve students' learning skills went unrecognized by students, who were unable to make the connection themselves.

Faculty interview comments suggested that they assumed that simply exposing students to CATs that model new learning strategies would result in improved student learning skills. However, research has indicated that students have a difficult time transferring learning skills from training situations to other tasks (Sternberg, 1983). Unless faculty explain how students might apply and

expand upon learning strategies introduced through CATs, such as synthesis in the one sentence summary (Angelo and Cross, 1993, p. 183), reflection in the minute paper, or organization in the concept map (Angelo and Cross, 1993, p. 197), it is unlikely that students will transfer these strategies to their individual study repertoires. For Classroom Assessment to achieve its full potential for improving learning, teachers must be very explicit in their efforts to help students learn about learning.

### **Recommendations: New Directions for Classroom Assessment Training**

Faculty in this study expressed high levels of satisfaction with the outcomes of Classroom Assessment for themselves and their students. Student reports were consistent with their teachers' comments. While faculty have developed skillful approaches for using Classroom Assessment, they still have room to expand that use, especially as a tool to improve students' learning processes. Few faculty know much about theories of learning or approaches to help students transfer what they have learned about learning to other study activities. What follows are some suggestions for going beyond the basic uses of CATs into a deeper understanding and more sophisticated way of thinking about learning.

1. *Faculty need more opportunities to come together and talk about teaching.*

Administrators interested in encouraging reflective practice among faculty members should create ongoing opportunities for faculty to come together to talk about teaching. This could be in the form of discussion groups or Classroom Assessment projects that last the entire semester and beyond. Whatever instructional issues faculty choose to focus on, the time will be well spent.

2. *Faculty need more explicit training on the relationship between CATs and cognitive learning theory.* In the same way that faculty need to be explicit to students about the potential applications of CATs to their study strategies, those who conduct CAT workshops for faculty need to be more explicit in pointing out the relationship between CATs and cognitive learning theory. This can involve tapping the resources of both *Classroom Assessment Techniques: A Handbook for College Teachers* (Angelo and Cross, 1993) and *Classroom Research: Implementing the Scholarship of Teaching* (Cross and Steadman, 1996). Both books discuss the theoretical bases for CATs and are designed so that they can be used by individual teachers or collaborative faculty groups. Faculty can engage in activities that cause them to examine the theory behind their favorite CAT or to design learning activities to follow up on the use of CATs in class so that students make the learning connections.

3. *Teachers should consider some key questions about their purposes for using Classroom Assessment.* At the beginning of this chapter, I noted that faculty purposes for using Classroom Assessment influenced how they implemented CATs, what changes they made in their teaching, and how they perceived the impact on their students and teaching. The following questions may help faculty be reflective practitioners as they consider using Classroom Assessment.

<i>Purpose for Using CATs</i>	<i>Questions to Consider About Potential CATs</i>
To obtain feedback on teaching and classroom activities	What do I expect to learn about my teaching? What teaching practices or classroom activities do I need feedback on?
To improve teaching	What skills am I interested in improving? How will I use feedback to make changes in my teaching?
To monitor student learning	What will I learn about student comprehension? Will I have to change my presentation format or review material based on CAT results?
To improve communication and collaboration with students	How does this CAT offer students a voice and a stake in controlling the class?
To improve student learning	What is my definition of improved student learning? What will students learn about their learning from this CAT? Does this CAT model any learning strategies?

Facilitators of Classroom Assessment training may also wish to raise these questions with the group. These questions may be especially useful when integrated with information about learning theory to help faculty develop their own connections between improving teaching and improving learning.

Many college campuses have already provided excellent introductory workshops in Classroom Assessment. Now experienced users of Classroom Assessment who desire additional challenges—and new users particularly interested in improving student learning—make up the target audience for enriched and extended Classroom Assessment workshops or advanced Classroom Assessment and Classroom Research faculty groups. These settings support teachers' efforts to apply what is known from research about learning to classroom practice, and to use Classroom Assessment to its fullest potential. The challenge for each institution is how it might adapt and apply some of these ideas to create a Classroom Assessment community on its own campus.

## References

- Angelo, T. A. *Classroom Research: Early Lessons from Success*. New Directions for Teaching and Learning, no. 46. San Francisco: Jossey-Bass, 1991.

- Angelo, T. A., and Cross, K. P. *Classroom Assessment Techniques: A Handbook for College Teachers*. (2nd ed.) San Francisco: Jossey-Bass, 1993.
- Carnegie Foundation for the Advancement of Teaching. *The Condition of the Professoriate: Attitudes and Trends*, 1989. Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching, 1989.
- Catlin, A., and Kalina, M. *What Is the Effect of the Cross/Angelo Model of Classroom Assessment on Student Outcome? A Study of the Classroom Assessment Project at Eight California Community Colleges*. Research project funded by the California Community College Chancellor's Office, Funds for Instructional Improvement Grant 92-0016, 1993.
- Cross, K. P., and Angelo, T. A. *Classroom Assessment Techniques: A Handbook for Faculty*. Ann Arbor, Mich.: National Center for Research to Improve Postsecondary Teaching and Learning, 1988.
- Cross, K. P., and Steadman, M. H. *Classroom Research: Implementing the Scholarship of Teaching*. San Francisco: Jossey-Bass, 1996.
- Csikszentmihalyi, M. "Intrinsic Motivation and Effective Teaching: A Flow Analysis." In J. L. Bess (ed.) *Motivating Professors to Teach Effectively*. New Directions for Teaching and Learning, no. 10. San Francisco: Jossey-Bass, 1982.
- Cuevas, G. J. "Feedback from Classroom Research Projects." *Community-Junior College Quarterly of Research and Practice*, 1991, 15 (4), 381-390.
- Frase L. E., and Piland, W. E. "Breaking the Silence About Faculty Rewards." *Community College Review*, 1989, 17 (1), 25-33.
- Kelly, D. K. *Classroom Research and Interactive Learning: Assessing the Impact on Adult Learners and Faculty*. Unpublished doctoral dissertation, Claremont Graduate School, Claremont, Calif., 1993. (Order Number DA 9330348)
- Kozma, R. B. "Communication, Rewards, and the Use of Classroom Innovations." *Journal of Higher Education*, 1979, 50 (6), 761-771.
- Pintrich, P. R., Smith, D.A.F., Garcia, T., and McKeachie, W. J. *A Manual for the Use of the Motivated Strategies for Learning Questionnaire*. (Tech. Report No. 91-B-004). Ann Arbor: Regents of the University of Michigan, School of Education, National Center for Research to Improve Postsecondary Teaching and Learning, 1991.
- Rogers, E. M. *Diffusion of Innovations*. (3rd ed.) New York: Free Press, 1983.
- Schön, D. A. *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books, 1983.
- Steadman, M. H. *CATs for Community Colleges: Changing Both Sides of the Teaching and Learning Equation*. Executive Summary of Practitioner-Based Research Project, Saratoga Springs, N.Y.: National Center on Adult Learning, Empire State College, 1994a.
- Steadman, M. H. *Implementation and Impact of Classroom Assessment Techniques in Community Colleges*. Unpublished doctoral dissertation, University of California, Berkeley, 1994b. (UMI Microform no. 9528688)
- Sternberg, R. J. "Criteria for Intellectual Skills Training." *Educational Researcher*, 1983, 12, 6-12.

MIMI STEADMAN is a private consultant on Classroom Assessment and Classroom Research operating out of New York.

