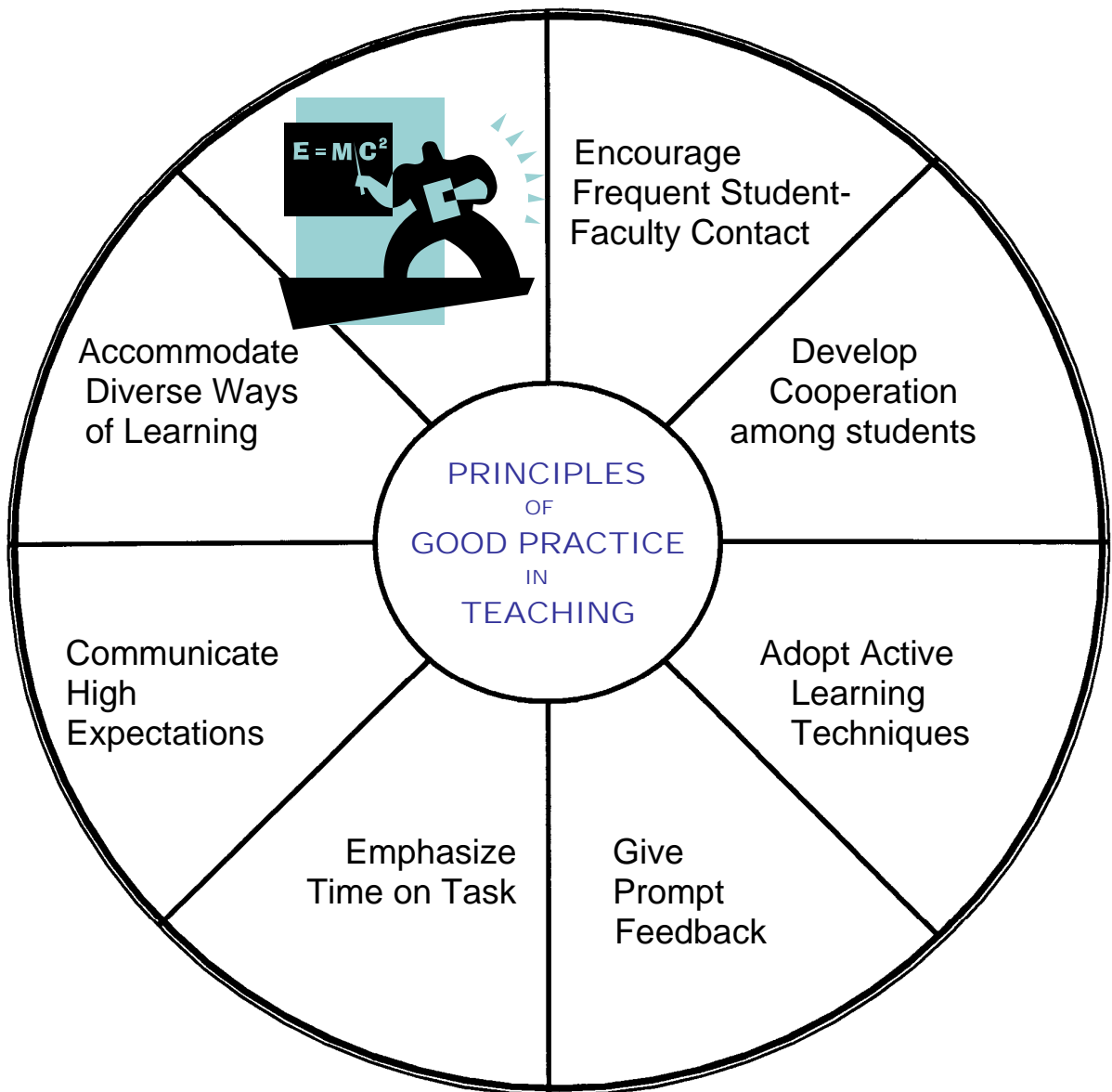


## Principles of Good Practice in Teaching Wheel



1. Good Practice Encourages **Contacts between Students and Faculty**.
2. Good Practice Develops **Reciprocity and Cooperation among Students**.
3. Good Practice Uses **Active Learning Techniques**.
4. Good Practice Gives **Prompt Feedback**.
5. Good Practice Emphasizes **Time on Task**.
6. Good Practice Communicates **High Expectations**.
7. Good Practice Respects Diverse Talents and **Ways of Learning**.

Since the Seven Principles of Good Practice were created in 1987, new communication and information technologies have become major resources for teaching and learning in higher education. If the power of the new technologies is to be fully realized, they should be employed in ways consistent with the Seven Principles. Such technologies are tools with multiple capabilities; it is misleading to make assertions like “Microcomputers will empower students” because that is only one way in which computers might be used.

Any given instructional strategy can be supported by a number of contrasting technologies (old and new), just as any given technology might support different instructional strategies. But for any given instructional strategy, some technologies are better than others: Better to turn a screw with a screwdriver than a hammer — a dime may also do the trick, but a screwdriver is usually better.

This essay, then, describes some of the most cost-effective and appropriate ways to use computers, video, and telecommunications technologies to advance the Seven Principles.

## **1. Good Practice Encourages Contacts Between Students and Faculty.**

Frequent student-faculty contact in and out of class is a most important factor in student motivation and involvement. Faculty concern helps students get through rough times and keep on working. Knowing a few faculty members well enhances students’ intellectual commitment and encourages them to think about their own values and plans.

Communication technologies that increase access to faculty members, help them share useful resources, and provide for joint problem solving and shared learning can usefully augment face-to-face contact in and outside of class meetings. By putting in place a more “distant” source of information and guidance for students, such technologies can strengthen faculty interactions with all students, but especially with shy students who are reluctant to ask questions or challenge the teacher directly. It is often easier to discuss values and personal concerns in writing than orally, since inadvertent or ambiguous nonverbal signals are not so dominant. As the number of commuting part-time students and adult learners increases, technologies provide opportunities for interaction not possible when students come to class and leave soon afterward to meet work or family responsibilities.

The biggest success story in this realm has been that of time-delayed (asynchronous) communication. Traditionally, time-delayed communication took place in education through the exchange of homework, either in class or by mail (for more distant learners). Such time-delayed exchange was often a rather impoverished form of conversation, typically limited to three conversational turns: 1. The instructor poses a question (a task). 2. The student responds (with homework). 3. The instructor responds some time later with comments and a grade. The conversation often ends there; by the time the grade or comment is received, the course and student are off on new topics. Now, however, electronic mail, computer conferencing, and the World Wide Web increase opportunities for students and faculty to converse and exchange work much more speedily than before, and more thoughtfully and “safely” than when confronting each other in a classroom or faculty office. Total communication increases

and, for many students, the result seems more intimate, protected, and convenient than the more intimidating demands of face-to-face communication with faculty.

The literature is full of stories of students from different cultures opening up in and out of class when email became available. Communication also is eased when student or instructor (or both) is not a native speaker of English; each party can take a bit more time to interpret what has been said and compose a response. With the new media, participation and contribution from diverse students become more equitable and widespread.

## **2. Good Practice Develops Reciprocity and Cooperation Among Students.**

Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's ideas and responding to others' improves thinking and deepens understanding.

The increased opportunities for interaction with faculty noted above apply equally to communication with fellow students. Study groups, collaborative learning, group problem solving, and discussion of assignments can all be dramatically strengthened through communication tools that facilitate such activity.

The extent to which computer-based tools encourage spontaneous student collaboration was one of the earliest surprises about computers. A clear advantage of email for today's busy commuting students is that it opens up communication among classmates even when they are not physically together.

For example: One of us, attempting to learn to navigate the Web, took a course taught entirely by a combination of televised class sessions (seen live or taped) and by work on a course Web page. The hundred students in the course included persons in Germany and the Washington, DC, area. Learning teams helped themselves "learn the plumbing" and solve problems. These team members never met face-to-face. But they completed and exchanged Myers-Briggs Type Inventories, surveys of their prior experience and level of computer expertise, and brief personal introductions. This material helped teammates size one another up initially; team interactions then built working relationships and encouraged acquaintanceship. This kind of "collaborative learning" would be all but impossible without the presence of the media we were learning about and with.

## **3. Good Practice Uses Active Learning Techniques.**

Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves.

The range of technologies that encourage active learning is staggering. Many fall into one of three categories: tools and resources for learning by doing, time-delayed exchange, and real-time conversation. Today, all three usually can be supported with "[worldware](#)," i.e., software (such as word processors) originally developed for other purposes but now used for instruction, too.

We've already discussed communication tools, so here we will focus on learning by doing. Apprenticeship-like learning has been supported by many traditional technologies: research libraries, laboratories, art and architectural studios, athletic fields. Newer technologies now can enrich and expand these opportunities. For example:

- Supporting apprentice-like activities in fields that themselves require the use of technology as a tool, such as statistical research and computer-based music, or use of the Internet to gather information not available in the local library.
- Simulating techniques that do not themselves require computers, such as helping chemistry students develop and practice research skills in “dry” simulated laboratories before they use the riskier, more expensive real equipment.
- Helping students develop insight. For example, students can be asked to design a radio antenna. Simulation software displays not only their design but the ordinarily invisible electromagnetic waves the antenna would emit. Students change their designs and instantly see resulting changes in the waves. The aim of this exercise is not to design antennae but to build deeper understanding of electromagnetism.

#### **4. Good Practice Gives Prompt Feedback.**

Knowing what you know and don't know focuses your learning. In getting started, students need help in assessing their existing knowledge and competence. Then, in classes, students need frequent opportunities to perform and receive feedback on their performance. At various points during college, and at its end, students need chances to reflect on what they have learned, what they still need to know, and how they might assess themselves.

The ways in which new technologies can provide feedback are many — sometimes obvious, sometimes more subtle. We already have talked about the use of email for supporting person-to-person feedback, for example, and the feedback inherent in simulations. Computers also have a growing role in recording and analyzing personal and professional performances. Teachers can use technology to provide critical observations for an apprentice; for example, video to help a novice teacher, actor, or athlete critique his or her own performance. Faculty (or other students) can react to a writer's draft using the “hidden text” option available in word processors: Turned on, the “hidden” comments spring up; turned off, the comments recede and the writer's prized work is again free of “red ink.”

As we move toward portfolio evaluation strategies, computers can provide rich storage and easy access to student products and performances. Computers can keep track of early efforts, so instructors and students can see the extent to which later efforts demonstrate gains in knowledge, competence, or other valued outcomes. Performances that are time-consuming and expensive to record and evaluate — such as leadership skills, group process management, or multicultural interactions — can be elicited and stored, not only for ongoing critique but also as a record of growing capacity.

#### **5. Good Practice Emphasizes Time on Task.**

Time plus energy equals learning. Learning to use one's time well is critical for students and professionals alike. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty.

New technologies can dramatically improve time on task for students and faculty members. Some years ago a faculty member told one of us that he used technology to “steal students' beer time,” attracting them to work on course projects instead of goofing off. Technology also can increase time on task by making studying more efficient. Teaching strategies that help students learn at home or work can save hours otherwise spent commuting to and from campus, finding parking places, and so on. Time efficiency also increases when interactions between teacher and students, and among students, fit busy work and home schedules. And students and faculty alike make better use of time when they can get access to important resources for learning without trudging to the

library, flipping through card files, scanning microfilm and microfiche, and scrounging the reference room.

### **6. Good Practice Communicates High Expectations.**

Expect more and you will get it. High expectations are important for everyone — for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy. New technologies can communicate high expectations explicitly and efficiently. Significant real-life problems, conflicting perspectives, or paradoxical data sets can set powerful learning challenges that drive students to not only acquire information but sharpen their cognitive skills of analysis, synthesis, application, and evaluation.

Many faculty report that students feel stimulated by knowing their finished work will be “published” on the World Wide Web. With technology, criteria for evaluating products and performances can be more clearly articulated by the teacher, or generated collaboratively with students. General criteria can be illustrated with samples of excellent, average, mediocre, and faulty performance. These samples can be shared and modified easily. They provide a basis for peer evaluation, so learning teams can help everyone succeed.

### **7. Good Practice Respects Diverse Talents and Ways of Learning.**

Many roads lead to learning. Different students bring different talents and styles to college. Brilliant students in a seminar might be all thumbs in a lab or studio; students rich in hands-on experience may not do so well with theory. Students need opportunities to show their talents and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily.

Technological resources can ask for different methods of learning through powerful visuals and well-organized print; through direct, vicarious, and virtual experiences; and through tasks requiring analysis, synthesis, and evaluation, with applications to real-life situations. They can encourage self-reflection and self-evaluation. They can drive collaboration and group problem solving. Technologies can help students learn in ways they find most effective and broaden their repertoires for learning. They can supply structure for students who need it and leave assignments more open-ended for students who don't. Fast, bright students can move quickly through materials they master easily and go on to more difficult tasks; slower students can take more time and get more feedback and direct help from teachers and fellow students. Aided by technologies, students with similar motives and talents can work in cohort study groups without constraints of time and place.