

Teaching Strategies for Distance Education: Implementing the Seven Principles for Good Practice in Online Education

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Introduction

As higher education enters a sea of uncertainty at the beginning of the 21st century, the intense focus on education delivered online is causing great waves of change, hope, new enthusiasm, doubt, skepticism, and fear to crash through the academic community. How do instructors cope with such a new and different method of teaching? Where are the familiar landmarks by which a course is charted? What does it all mean?

Beyond the use of technology as a way to deliver educational products, *how* we teach in the real and virtual classrooms is undergoing more scrutiny now than ever before. In order to put this whole technological and pedagogical dilemma in perspective, let's examine how the current educational revolution compares with educational revolutions in the past. Two times in the historical past, education has undergone dramatic transformations: "From the oral dialogue of Socrates' day toward educational forms that included reading and writing; and from independent scholars teaching independent learners in 'ad hoc' settings in the early middle ages to a new mode of learning: organized scholars and students working within university campuses" (Ehrmann).

Each of these revolutions brought about huge advances in the accessibility of education to some, while reducing accessibility for others. Each of these revolutions brought about new educational advantages while losing some other essential educational characteristic. In the revolution from the spoken word to the written word, accessibility to "knowledge" increased dramatically, pushing the scale of education to new levels; more versions of the "facts" and the "truth" become available; knowledge was unbound from a specific time and place to include sites removed from the origin of the information and to preserving knowledge across millennia. Perhaps this is when "distance education" was truly born. On the other hand, education lost much of the oral tradition. Reading the thoughts and ideas of an author is not the same as hearing that person tell and explain them. Reading never truly guarantees that a concept is understood as the author intended. Another loss in moving from the oral to the written tradition was accuracy. Mistakes of transcription and composition were repeated and widely distributed (Ehrmann).

When education transformed itself into a campus-based tradition, students gained access to a concentrated educational collective that included experts, materials, facilities, and other learners. The potential depth of learning increased along with the possibility of shared ideas. The campus with its large lecture halls opened access for many, but removed access to local scholars, disenfranchising some learners who could not live in residence at centralized campuses. The nature of education also suffered as learning went from an active dialogue with a learned scholar, to passive reception of lectures (Ehrmann).

What Ehrmann terms "The Third Revolution" is no different. Each gain in accessibility and quality is accompanied by concomitant losses. Today access to interactive presentations, library materials, seminars (both synchronous and asynchronous), and many educational products from diverse institutions offered through portals is unprecedented. At the same time, those who are not technologically advantaged are shut out from many of these opportunities (Ehrmann). As education becomes more and more a physically remote process, the nature of the communication process changes with the loss of physical contact and the visual feedback of body language, and with the anonymity of electronic communication in its various forms. The sheer volume of information available today forces a paradigm shift in education from an emphasis on accumulating a body of knowledge to acquiring metalearning skills to locate and

use information effectively and to becoming a life-long learner. The successful learner and teacher today must learn about learning as much as they teach and learn subject matter.

Each of these three revolutions is based on enabling technologies. The first revolution from spoken to written was enabled by the broad acquisition of writing skills and later by the printing press. The second revolution was enabled by infrastructure such as lecture halls, chalkboards, localized housing, laboratories, and libraries as well as roads to convey students and scholars to centralized locations. The third revolution we are experiencing now is driven by inexpensive silicon chips, a global communication network and satellites, telephone, fax machines, video cameras, and the World Wide Web (Ehrmann).

It is not, however, the technologies themselves that cause any change, it is the ways in which we as educators choose to use them. During the third revolution, we are in danger of compromising the quality of education because we may too easily lose sight of the goal: learning. "From a pedagogical perspective, a teacher-centered online classroom is an oxymoron in that it removes the need for the professor.... The student is forming a relationship with the text, not the individual professor" (Knowlton, 2000, p. 9). Knowlton misstates the role of the instructor in online learning, but hits the nail on the head in identifying online learning as being learner centered.

Opposing paradigms

The teacher-centered classroom vs. the student-centered classroom

	Positivism (Teacher-Centered)	Constructivism (Student-Centered)
Things	Professor introduces "things" and suggests the implications of those things.*	Both professor and students introduce "things," and both offer interpretations and implications
People	Roles of professor and student are regimented: The professor disseminates knowledge, and the student reflects that information.	Roles of professor and student are dynamic: The professor and students are a community of learners. The professor serves as coach and mentor; the students become active participants in learning.
Processes	Professor lectures while students take notes.	Professor serves as facilitator while students collaborate with each other and the professor to develop personal understanding of content.

*Things: discipline dependent, such as lab tools and specimens, maps, instruments, etc. (Knowlton, 2000, p.7).

Many instructors of traditional courses who rightly believe that learning is a social process consider "'same-time same-place' interaction central to a successful educational experience" (American Federation of Teachers, 2000, p. 5) and are skeptical that online learning can measure up. Among their legitimate concerns are:

- "Whether deep understanding of difficult material—beyond amassing facts—can occur in the absence of same-time same-place interaction;
- Whether distance education may be ineffective for certain types of subjects and students, leading to higher dropout rates;
- Whether needed equipment, training and technical support is reaching distance education students and faculty; and
- Whether limitations on the availability of library and learning materials impair distance education courses" (American Federation of Teachers, 2000, p. 5).

There is no dispute that the learning environments in the traditional classroom and in the online virtual classroom are different. The dispute occurs when the argument is advanced that students can't get the same education online as they would face-to-face. What is really being disputed here is not whether the educational experience for the student is *equal* in these different environments, but whether the educational experience for the student is *equivalent* in each environment. "It is important to employ a variety of technologies to help students achieve learning outcomes. Equivalency is the foundation for this" (Simonson, 2000, p. 30).

The Seven Principles

One method to ensure that quality remains in online learning and that students receive equivalent experiences is to review the key principles that have been identified for traditional teaching and incorporate those principles into the online learning environment. In 1991, Chickering and Gamson identified seven principles that characterized good practice in undergraduate education. These seven hallmarks of good teaching grew out of a review of "50 years of research on the way teachers teach and students learn" and a conference that brought together a distinguished group of researchers and commentators on higher education. The primary goal of the Principles' authors was to identify practices, policies, and institutional conditions that would result in a powerful and enduring undergraduate education. A second goal was to offer a set of research-based principles that would help sustain debate and action to stimulate reform in undergraduate education" (Chickering & Gamson, 1991, p. 13).

Chickering and Gamson identified that good practice in undergraduate education:

1. Encourages student-faculty contact

Frequent student-faculty contact in and out of classes is the 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 future plans.

2. Encourages 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 own ideas and responding to others' actions sharpens thinking and deepens understanding.

3. Encourages active learning

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

4. Gives prompt feedback

Knowing what you know and don't know focuses learning. Students need appropriate feedback on performance to benefit from courses. When getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. At various points during college, and at the end, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves.

5. Emphasizes time on task

Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty. How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis for high performance for all.

6. Communicates high expectations

Expect more and you will get more. 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 when teachers and institutions hold high expectations of themselves and make extra efforts.

7. Respects diverse talents and ways of learning

There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learning in new ways that do not come so easily (Chickering & Gamson, 1991, pp. 65–68).

These seven principles have stood the short test of the time that has passed since they were compiled. Although they are stated as separated principles, they may more accurately be viewed as overlapping aspects that combine to produce effective practice, Figure 1.

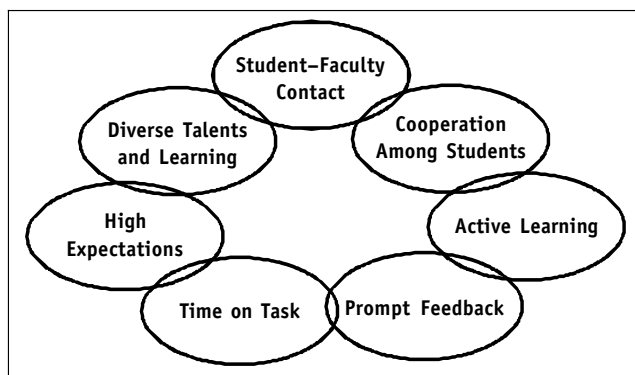


Figure 1. The seven principles for good practice in undergraduate education are more accurately viewed as overlapping aspects that combine to produce good practice. No single principle stands on its own.

As the American Federation of Teachers points out in their May 2000 report on guidelines for good practice, we must guard against “good practice guidelines being applauded at their inception and then ignored whenever it becomes inconvenient to stick by them. If these guidelines have validity, administrators and faculty members must be willing to say ‘no’ to practices that violate good practice” (p. 6).

Alley and Jansak (2001), define a principle as being “applicable to nearly any formal learning situation, independent of the delivery medium” (p. 3). They define a practice as being “suited to a specific mode of delivery (e.g., class based, online, mixed mode)” (p.3). Finally, they define an application as being “specific to a particular course, within a specific delivery infrastructure” (p. 3). Let us now examine Chickering and Gamson’s seven principles and how they can be implemented in the online environment as practices, proceeding with the understanding that learning is “‘messy.’ Particularly when trying to develop online learning” (Alley & Jansak, 2001, p. 22). Specific applications must be left to each individual instructor to define and construct.

1. Good practice in undergraduate education encourages student–faculty contact

Teaching in any environment involves much more than providing content to students. It involves, at least in the ideal, “leading the student to analyze, synthesize, and exercise critical judgments. These advanced skills require a high amount of interactivity between professor and student, as well as collaboration among students” (Weiss, 2000, p. 47). What may be surprising to many teachers is that more than in-class contact, *outside-of-class contact* has a positive impact on student learning by enhancing student motivation, intellectual commitment, and personal development (Pascarella, 1980; Snow, 1973; Wilson, Gaff, Dienst, Wood, & Barry, 1975). Wilson et al (1975) concluded from an eight-institution study that “the relationships that faculty and students develop outside the classroom may well be the part of teaching which has the greatest impact on students” (p. 107). The bad news for online learning is that the face-to-face contact humans crave is reduced or non-existent. The good news is that students will contact instructors much more readily using e-mail than in person outside of class. This “good news” may in turn become “bad news” when an instructor is buried in e-mail. “No other technological application since the office hour has promoted student-faculty contact more than electronic mail” (Testa, 2000, p. 238).

The argument can and has been made that written communication is not the same as verbal communication. This is correct. But again, what is needed in the online classroom is to provide *equivalent* experience, not *equal* experience. Electronic communication is the lifeblood of an online course. Without it, the student doesn’t even exist. Mediated communication may actually provide some advantages over real-time face-to-face communication. Berge identified four advantages of synchronous and asynchronous communication.

Four advantages of asynchronous communication are:

- “It is flexible, so students can access course materials at any time.
- It allows student time to reflect.
- It lends itself to a situated learning approach whereby students can relate ideas being discussed to their own working environment.
- Asynchronous technologies are cost-effective” (Berge, 2000, p. 27).

Asynchronous communication technologies include:

- E-mail
- Bulletin boards
- Listservs
- Voice mail
- Fax
- Postal services

Four advantages of synchronous communication:

- “They are more motivating and thus can better focus the energy of the group.
- Real-time interaction helps to develop a sense of ‘social presence’ and group cohesion.
- Synchronous systems provide quick feedback on ideas, and they support consensus and decision making.
- Synchronous events encourage people to keep up-to-date on assigned work and provide structure and discipline” (Berge, 2000, p. 27).

Synchronous communication technologies include:

- Chat rooms
- Live online seminars
- Telephone conferencing
- Instant messaging

Some ways to encourage student-faculty contact in online courses

adapted from Graham, Cagiltay, Craner, Lim, & Duffy (2000) and Nelson (2000)

- Encourage students to contact you through private e-mail messages.
- If students are local, encourage face-to-face meetings.
- Do not publicly embarrass students on any of the courses communication tools.
- Share your values, attitudes, and experiences with your students. Invite them to do the same.
- Begin the semester with a communication activity that is solely designed to help students get to know one another. Model participation by beginning the activity with your own information.
- Make sure that your e-mail policies are clearly stated and that all students understand them. Include your response time, when you might not be available, appropriate content, and anything else that might affect student-instructor communication.
- If teaching assistants handle e-mail for you, make sure they are aware of your e-mail policies.
- If you have not heard from a student on the course bulletin board or in course activities, contact him/her to see if there is a problem. Do not let them fall behind.
- Make sure students know what writing style you expect when using various communication tools.
- Make sure students know what types of communications to send via private communication (e-mail, telephone, fax) and what types of communication to send via public communication (bulletin board, listserv, chat room).
- Make sure students know your physical and telephone office hours.
- Send a personal note through the mail if a situation warrants it.

Disadvantages of mediated communication	What to do about it
<p>"E-mail lacks the spontaneity, immediate feedback, personal focus, and multiple channels associated with face-to-face communication. E-mail also transmits fewer social status cues than face-to-face communication and promotes a sense of anonymity" (Nelson, 2000, p. 7).</p>	<ul style="list-style-type: none"> • "Add Tone.... professors of online courses should supply... tone through the use of written cues.... It is appropriate for the author to make clear how a statement is to be understood: 'I say this in jest.' Or, 'I am sorry to say'" (Weiss, 2000, p.48). • "Include 'body language' by using emoticons.... Emoticons should be used by writers to help express their meaning. They are not to be used to describe the tone of others; such usage would be dehumanizing.... Use Expressive Language... an ironic twist, or even humorous hyperbole can enhance the expressiveness of... writing" (Weiss, 2000, p. 49). • Make sure students know what your response time policy is and that you respond to student inquiries accordingly. <p>An extensive list of emoticons can be found at members.NBCi.com/newbienet2/SmileyFAQ.html</p>
<p>Students may send less than civil messages.</p>	<p>Establish guidelines for e-mail communication within the context of the class. Involve the class itself in defining what is and is not acceptable in posting with various course communication tools. Model these communication guidelines in your own postings. Deal with violations directly with the violator in a timely manner.</p>
<p>You may become overwhelmed by e-mail.</p>	<ul style="list-style-type: none"> • Establish a protocol for contacting the instructor. Students can be encouraged to find an answer from their peers first, the course TA second, and only contact the instructor as a last resort. • No message from a student should go unanswered. Set your e-mail to send an automatic reply that tells the student you received the message and will respond within a given amount of time. • Use boilerplate answers where appropriate.
<p>Students may be reluctant to contact you by e-mail.</p>	<ul style="list-style-type: none"> • Model appropriate interaction. Send students you don't hear from a personal note to find out why they are not communicating. Encourage them to contact you. Let them know you care. • Respond to e-mail quickly. If students don't hear from you quickly, they will assume you don't care and won't bother to contact you again.

2. Good practice encourages cooperation among students

Cooperative and collaborative learning give students the opportunity to test their understanding of subject matter with their peers. During this process, knowledge becomes community property—it belongs to the whole group. Group work in an online course holds its challenges. We cannot assume that students know how to work effectively as a group either in a traditional or a virtual setting. Students should be given, or even better, should develop, guidelines for effective team participation. Another problem with group work in either setting is in evaluating the products of the group. Evaluation criteria should be clearly delineated as prepared by the instructor or as developed by the class. Group assessment should include a peer evaluation component with precisely defined criteria. Students then share a common grading component—the group grade, and an individual component—the peer evaluation. Students should be made aware of the ethical implications in evaluating one another. For instance, it is considered unethical to agree to the same rating for every member.

In a review of 137 studies that support the “utility of cooperative learning groups for increasing productivity, developing committed and positive relationships among members, increasing social support, and enhancing self-esteem,” (Johnson, Johnson, & Smith, 1990, cited in Chickering & Gamson, 1991, p. 16) found that cooperative learning can be characterized by five elements:

- Positive interdependence
- Face-to-face interaction
- Personal responsibility
- Collaborative skills
- Group processing

They further found that cooperative learning can be classified into three types of learning groups:

- Formal
- Informal
- Base

Technologies and techniques that encourage student cooperation include:

- Simulations
- Games
- Chat rooms
- Group projects
- Group products
- Discussions
- Debates

“Asynchronous communication can help to promote collaboration among students when it incorporates a situated learning approach whereby students can relate ideas being discussed to their own working environment” (Berge, 2000, p. 27). By collaborating with one another, students may be more able to transfer what they are learning to their own particular situation. Asynchronous communication allows students to participate and interact on a more convenient schedule and to put more thought into their communications, thereby increasing the quality of the exchanges. Students may begin to cooperate spontaneously in an online environment as they help one another to learn the technology (Testa, 2000). Asynchronous communication also gives an advantage to those students who would be more reticent in a traditional classroom. In asynchronous communication they have the time to reflect and compose their thoughts that they don’t have in a face-to-face discussion.

Asynchronous communication can become frustrating due to a phenomenon known as “rolling time.” The rolling time effect happens when students check their course communication at uneven intervals. When a participant in an asynchronous group checks communications, they usually assume that whenever they check the group postings, they are then up-to-date. This can cause problems when student A checks in six times a day, sees no changes and assumes everyone else is disinterested, and student B checks in only once a week and is overwhelmed with the amount of new information to process. Other problems with collaborative online projects include the increased amount of time a project takes to complete and unfamiliarity with the technology.

Asynchronous discussion groups via course bulletin boards or listservs are another channel for student collaboration. As with using e-mail, clear guidelines for using these tools should be established. The more time a student has to reflect before posting, the higher the quality of the posting should be. Whereas postings to a chat room or online seminar are quick, spontaneous, informal, grammatically incorrect, and contain misspellings and abbreviations, postings to bulletin boards and listservs should be more closely composed and checked before posting. Guidelines should be established as to the proper netiquette expected in postings with asynchronous tools. What constitutes disruption in online communication should be clearly defined and enforced. In chat rooms, a disruptive student can be expelled from the chat room and denied access until their conduct improves.

Synchronous communication can be more motivating and can better focus the energy of the group than asynchronous communication. Real-time interaction helps students to know one another and to “develop a sense of ‘social presence’ and group cohesion. Synchronous systems provide instantaneous feedback on ideas, and they support consensus and decision making. Synchronous events encourage people to keep up-to-date on assigned work and provide structure and discipline” (Berge, 2000, p. 27).

Synchronous communication can become very disorganized very quickly unless guidelines and protocols are in place to keep communication organized. One instructor allows free discussion for a period of time, then asks students to stop responding while he summarizes and addresses questions. On the other hand, chat rooms are very invigorating with their rapid fire discussion. Students lacking keyboarding skills are at a disadvantage in these fast-paced environments that require split attention between keyboarding and keeping up with the postings.

Some ways to encourage student cooperation in online courses

- Design collaborative group projects that require input from each group member and that are recursive, that is, the project requires multiple iterations to be completed.
- Make sure the students know how to participate in a group project. At the beginning of the project, assign group roles to students and rotate the roles within the group.
- Provide a number of milestones for the project so students have a way to assess their own progress.
- Provide examples of good, mediocre, and bad projects.
- Make sure the students know how to use the electronic tools necessary to complete the project.
- Keep membership in groups small, no more than four or five.
- Assign only one major group project per term. Assign the project early in the term so students will have ample time to work on it.
- Make participation in discussion groups mandatory. Define what constitutes a contribution to the discussion groups.
- Keep discussion fora well managed to minimize posting to the wrong forum.

- Provide a focus for course discussions, such as a summary, analysis, or synthesis. Rotate these duties so that all students have a turn.
- Provide examples of good, mediocre, and bad discussions contributions.
- Give students feedback on the quality of their discussions. This will reduce student stress by letting them know their standing in the course.
- Provide “weaving” comments when and where necessary to bring related ideas together. However, the instructor should not dominate the discussion.
- Selectively (at random) evaluate discussions to keep the quality of contributions up.
- Make sure the students know that you are “present” in the course and available to them when they need help.
- Create an informal meeting place for your students where they can discuss topics unrelated to the course and can get to know one another.
- Have students post their biographies and interests to help them make connections with one another. Include photographs if possible.
- If possible, begin the course with a face-to-face meeting.
- Require students to provide critical feedback to one another on their projects and publicly posted course work.

3. Good practice in undergraduate education encourages active learning

Chickering and Gamson’s 1991 report reconfirmed that cooperative and social learning tends to increase students’ involvement in learning (p. 17). Active learning can be simply defined as any kind of learning in which the students are doing something and *thinking about what they are doing*. Active learning is work, but from infancy onward, the human brain actively seeks out information that is relevant to a person’s situation. Attributes of active learning in higher education include such descriptors as discussing, challenging, analyzing, and problem solving. Some types of active learning identified in Chickering and Gamson’s 1991 report include case studies, games, simulations, and independent study. The study also reported that “teaching methods that encourage student activity and involvement, especially student-to-student interaction, are likely to be superior to more passive methods when higher-level cognitive or affective learning is the goal” (Chickering & Gamson, 1991, p. 18).

Active learning in the online course is not an option, it is a necessity. “In fact, a student’s very existence depends on active participation” (Knowlton, 2000, p. 9). “If students... do not post a contribution to the discussion [for instance]... the instructor has no way of knowing they have been there” (Palloff & Pratt, 1999, p. 6). The very nature of the online course and the World Wide Web demand active participation by online students. The sheer volume of information available on the World Wide Web precludes neatly packaged bits of information—there is always more available. As Knowlton (2000) points out, students must actively seek out information relevant to the course and integrate it into their own knowledge base. In the online classroom, even more so than in the traditional classroom, “learners must be viewed as meaning makers who actively select, organize, and integrate their experiences with existing knowledge” (Hacker & Niederhauser, 2000, p. 54). Information in the age of a networked world is so volatile that it becomes meaningless for any person to “know” everything about a particular subject. The critical skill for students is to learn how to learn, and that means being an active participant in the process, rather than a passive receptor for “knowledge.”

All learning involves the transfer of information from one knowledge base to another, with the creation of new internal relationships between what is already known and what has remained unknown. The ability to internalize knowledge is one type of transfer. The ability to

externalize and extend knowledge is another type of transfer. Learning requires the ability to do both. The more actively learners work to capture, comprehend, and understand new concepts, the more likely they will be to acquire a deep and enduring level of learning. “Doing’ helps transfer new knowledge from short term memory to long term memory. The act of doing serves as a formative assessment in that the doer encounters (sometimes quite forcefully) the ‘holes’ in his understanding and is prompted to interpolate the missing sub-skill” (Alley & Jansak, 2001, p. 16). Both internal and external transfer depend on the student’s ability to identify and abstract relationships. There are two types of student-generated relationships that are useful in designing distance learning instruction. “First, learners must construct relationships among the information read in instructional materials. Second, learners must relate this new information to their existing knowledge structures in order to form new meanings and conceptual relationships” (Morrison & Guenther, 2000, p.19).

One of the most effective methods to engage students actively in their own learning is to use case-based and/or problem-based learning. These two types of learning immerse students in examples that help them to understand and integrate concepts. “Recent work has shown that the use of examples that are anchored in contextualized and authentic cases can lead to improved educational outcomes, and that case-based instruction may be well-suited to computer-based technologies. Anchoring instruction in specific real-world experiences promotes problem finding and solving, and the transfer of learning.... Authentic cases... are better than concrete cases,... and concrete cases are better than symbolic cases” (Hacker & Niederhauser, 2000, p. 56). However, care should be exercised to prevent over-contextualization to a degree that prevents students from abstracting the principles that drive the case. Cases and problems can be presented in many formats: video clips, written, software-based, in games. Follow-up discussion ensures that the targeted concepts have transferred and give the instructor an opportunity to identify and remedy any misconceptions.

Some ways to encourage active learning in online courses

adapted from Hacker & Niederhauser (2000) and Graham, et al, (2000)

- Require students to construct deep explanations, justifications, and reasons for what they think and do. Require participation in course discussion, posting messages in their own words to help them analyze and synthesize disparate chunks of information.
- Develop question-response-clarification cycles between professor and students or among students. Use listservs and/or bulletin boards to lessen the instructor work load.
- Provide opportunities for students in online classrooms to engage in high-level discussions by framing and presenting ideas, formulating challenging questions for peers, and responding to those questions to clarify misconceptions that arise.
- Challenge students to learn to develop reasoned responses that include explanation and justification. Listservs and bulletin boards are more appropriate venues for these types of exchanges than chat rooms that require quick responses.
- Require students to devise and respond to questions that require answers based on integration or synthesis of disparate chunks of knowledge, logical connections, and causal or goal-oriented reasoning.
- Provide explicit instructions to students for participating in online discussions.
- Get students to relate ideas that they are learning to real-world issues.
- Assign “real-world” projects or authentic assignments. Help students to abstract the principles that underpin the learning objective(s) for the assignments.
- Require students to present their work to the rest of the class.
- Require class members to give feedback on the projects that are presented. Specific questions can be formulated to help structure a productive asynchronous discussion about the project or assignment work.

- Encourage students to challenge the ideas of the instructor, of other students, or those presented in the readings or other course materials.

4. Good practice in undergraduate education gives prompt feedback

Where have I been, where am I now, where am I going? These are questions students need to have answered throughout the duration of a course, whether online or traditional. Students need to constantly monitor their understanding of course content and expectations in order to make meaningful progress. They can do this with timely and appropriate feedback from the instructor. Without an explicit understanding of their progress, students become anxious, and may lose their path through the course, particularly in online courses in which they feel isolated and disconnected. Chickering and Gamson found that “use of prompt feedback in college courses shows a clear and positive relation to student achievement and satisfaction.” (p. 18) Beyond promptness, feedback should be appropriate and specific. “Students need feedback about the degree to which they know when, where, and how to use the knowledge they are learning” (Bransford, Brown, & Cocking, 1999, p.47).

Much research has been conducted on Keller’s PSI system, a “system of individualized instruction that features, among other major characteristics,... (1) A student works at his or her own pace through a series of topics or units. (2) A student must master each unit by achieving a near perfect score on a test before moving on to the next topic. (3) A student proctor corrects the test, provides immediate feedback to the student, and offers encouragement and remedial help” (Keller, 1968, cited in Chickering & Gamson, 1991, pp.-18–19). The PSI system showed statistically significant superiority in student achievement and satisfaction, which was attributed in large part to the immediate, corrective, and supportive feedback (rather than general comments) that the system provides (Chickering & Gamson, 1991). Hacker and Niederhauser (2000) are also proponents of “feedback that is commensurate with performance... embedded with... motivational components” (p. 53).

The electronic tools available in an online course seem ready made to provide the immediacy of feedback proposed by Keller, and Hacker and Niederhauser. The focus of assessment and feedback, however, must change from teacher-centric to learning-centric. With the increasing use of computer-based instruction both at a distance and in combination with traditional instruction, “there are significant changes in educational measurement methodology. Class attendance as an assessment tool becomes extinct, whereas class participation becomes quantifiable.... How to assess students’ writing is a major concern for both professors and students” (Bauer & Anderson, 2000, pp. 65–66). Using the traditional teacher-centered objective testing as the basis for both formative and summative student evaluation is both possible and easy using existing course management tools, but it also displaces the learner from ownership of the content. On the other hand, new territory is being explored in grading students from a learner-centric, constructivist paradigm. Electronic tools such as calculators, spreadsheets, graphing programs, function probes, simulations, and modeling programs can give students instantaneous visual feedback and can be used to scaffold students’ thinking in an interactive way (Bransford, Brown, & Cocking, 1999). Bauer and Anderson (2000) provide three rubrics for assessing students’ written contributions to online courses for content, expression, and participation, and a fourth rubric for assessing an e-folio.

Establishing criteria for a rubric

One major advantage the online course has over the traditional course is the permanency of discussion records. In the traditional classroom, the instructor must usually rely on memory to

assess student participation and contributions to class discussions. In online courses, there is a permanent and “replayable” record of class discussions that allows instructors to more accurately assess informal discussion and give appropriate feedback to students.

Students need to know from day one how their work, including informal and formal participation and contributions, will be judged. “In assessing students’ writing—both informal and formal—in the online classroom, it is best if both teacher and student internalize standards, so that writing toward those standards becomes instinctual. With a clearer understanding of the expectations, students are likely to learn more from the tasks.... with clear criteria to guide them, students can more effectively evaluate their own writing” (Bauer & Anderson, 2000, p. 66). The ten-point rubrics developed by Bauer and Anderson (2000) for content, expression, participation, and for assessing the e-folio follow.

Exhibit 9.1 Rubric for online content assessment

Number of Points	Skills
9–10	Demonstrates excellence in grasping key concepts; critiques the work of others; provides ample evidence of support for opinions; readily offers new interpretations of discussion material.
7–8	Shows evidence of understanding most of the major concepts; is able to agree or disagree when prompted; is skilled in basic level of support for opinions; offers an occasional divergent viewpoint.
5–6	Has mostly shallow grasp of the material; rarely takes a stand on issues; offers inadequate levels of support.
1–4	Shows no significant understanding of material.

(Bauer & Anderson, 2000, p. 67)

Exhibit 9.2 Rubric for assessing expression in formal online postings

Number of Points	Skills
9–10	Student uses complex, grammatically correct sentences on a regular basis; expresses ideas clearly, concisely, cogently, in logical fashion; uses words that demonstrate a high level of vocabulary; has rare misspellings.
7–8	Sentences are generally grammatically correct; ideas are readily understood but show signs of disorganization; some transitions between concepts are missing; there are occasional misspellings, especially with homonyms not detected with spelling checks.
5–6	Poor use of language garbles much of the message; only an occasional idea surfaces clearly; language is disjointed; there is overuse of the simple sentence and repetition of words; paragraphs are often unrelated to each other.
1–4	Writing is largely unintelligible.

(Bauer & Anderson, 2000, p. 68)

Exhibit 9.3 Rubric for assessing online participation

Number of Points	Skills
9–10	Contributions are prompt, timely, relevant, self-initiated; remarks are posted freely on all assignments throughout the course; there is no attempt to dominate conversation.
7–8	Student generally keeps up with the discussion; needs an occasional prompting to contribute; might participate in some discussions more than others.
5–6	Participation is spotty; picks and chooses topics to get involved in; offers short, perfunctory postings when prompted; takes limited initiative.
1–4	Student rarely participates freely; makes short, irrelevant remarks.

(Bauer & Anderson, 2000, p. 69)

Electronic portfolios

An electronic portfolio, or e-folio, is an accumulation of the student’s work throughout the course. Students should be advised at the outset of the course that they will be assessed based on their e-folio, and explicit criteria should be established for assessing the e-folio. Students

should be made aware of the value of the e-portfolio as a tool for reflection and analysis of their accomplishments in the course, actively involving them in the assessment process (Bauer & Anderson, 2000). Wiedmer (1998) suggests three approaches to evaluating the e-portfolio: 1) An analytical evaluation, with each section of the e-portfolio graded separately on an individual scale; 2) A holistic evaluation, judging the e-portfolio in its entirety; 3) Analysis of the primary trait, assessing the student's accomplishments in one or more major areas of emphasis. E-portfolios should be reviewed by students themselves, by their peers, and by the instructor. Students may be asked to submit "written reflections about their artifacts, explanations of how they met course objectives, and discussions of what they learned in the course" (Bauer & Anderson, 2000, p. 69). Evaluation by peers and by the instructor should be made against a specific set of criteria. Perhaps most important in the use of portfolios, either physical or electronic, is to provide continuing formative assessment as the portfolio is assembled—feedback benefits students most when provides an opportunity for them to identify misconceptions and revise their thinking as they work on projects (Bransford, Brown, & Cocking, 1999).

Exhibit 9.4 Rubric for assessing the e-portfolio

Number of Points	Skills
9–10	Meets or exceeds required quantity of artifacts; artifacts are creatively presented and well organized; shows significant level of meaningful reflection; provides strong evidence of peer and self-assessment; shows an obvious investment of time and effort.
7–8	Meets required quantity of artifacts; shows some creativity and adequate organization; demonstrates some amount of meaningful reflection; includes evidence of peer and self-assessment; generally shows a good effort.
5–6	Less than the required number of artifacts; lacks creativity; shows little reflection on items; offers some peer and self-assessment; shows a limited effort.
1–4	Shows a poor effort to meet any of the requirements.

(Bauer & Anderson, 2000, p. 70, adapted from Scanlon & Ford, 1998)

Some ways to incorporate prompt feedback in online courses

adapted from Graham, et al. (2000), Richardson and Turner (2001), the American Federation of Teachers (2000), and Bransford, Brown, & Cocking (1999)

- Provide an initial assessment so the instructor and the students both know the students' knowledge base and preconceptions.
- Provide acknowledgement feedback—feedback that confirms or assures the student that some event has taken place. Acknowledgement feedback can be set up to be sent automatically from your e-mail software.
- Provide information feedback—feedback that is informational or evaluative in nature.
- Monitor group bulletin boards regularly and giving specific informational feedback to students.
- Guide students by asking questions and encouraging them to find their own solutions rather than just giving them answers to their questions.
- Provide evaluative feedback by summarizing each week's discussion.
- Design assignments and projects that require students to provide feedback to each other.
- Selectively evaluate discussions only at a certain number of (unspecified) times during the semester.
- Assign a group discussion leader for each topic or assignment and making that person responsible for encouraging and stimulating quality group discussion. The discussion leader is then the only one graded for each discussion. The discussion leader is rotated for each new topic until each student has had a turn.

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- Emphasize the importance of regular work, steady application, sound self-pacing, and scheduling.
- Structure the course to spread deadlines throughout the semester rather than clustering them at one or two points.
- Use asynchronous conferencing to improve student time on task.
- Monitor student discussions to make sure they remain on topic.
- Make sure course resources are easily accessible.
- If you haven't heard from a student, find out why. It is all too easy to fall behind in an online course.

6. Good practice in undergraduate education communicates high expectations

"In general, research shows that if teachers set high but attainable goals for academic performance, academic achievement usually increases.... The literature consistently shows, contrary to faculty belief, that students give higher ratings to difficult courses in which they have to work hard" (Cashlin, 1988; Cashlin & Slawson, 1977; Marsh, 1984, cited in Chickering & Gamson, 1991, p. 21). Meeting a challenge is in and of itself motivational and engaging in an online course is indeed challenging. Students engaged in distance education need to be highly self-motivated and self-starting. However, students new to distance education in general, and online courses in particular, may wrongly assume that the requirements for the course are lower, that the course will be "easy." These misconceptions must be firmly dispelled at the outset of the course. Expectations for the course must be explicitly stated including standards for participation, expected time commitment, and assessment criteria.

Some ways to communicate high expectations in online courses

adapted from Weiss (2000), Hacker & Niederhauser (2000), Graham, et al. (2000), and the American Federation of Teachers (2000)

- Model appropriate interaction. Students should know that the professor is available and intellectually involved in the work of the course.
- Create an ethical community of learners. Challenge the students to think about the ethics of online relationships and that a breach in ethics has victims, that the class consists of real people, not just words and images on a screen.
- Require students to become active participants in their own learning.
- Clearly list your expectations from the students on the course Web site.
- Publicly calling attention to excellent performance by students.
- Periodically discuss how well the class and individual groups are doing during the course of the semester. Giving the class feedback as a whole can help to motivate them to reflect on their performance and improve it.
- Provide examples of exemplary performance to students.
- Evaluate discussion based more on quality of content and less on length or number of postings.
- Increase emphasis on peer evaluation and feedback. Make the contribution of meaningful feedback a requirement for the grade.
- Teach students how to give appropriate feedback.

- First-time distance education students should be given a clear advance statement of course requirements, in written form or through a same-time same-place video or Internet-based orientation program, including:
 1. All course requirements;
 2. The weekly time commitment and specific computer skills required by the course; and
 3. A presentation of the practical difficulties of working at a distance and what is needed to manage those challenges successfully.
- Before the course begins, students should be required to submit a short written statement (a paragraph or two) to the institution or instructor delivered electronically. The statement is designed to demonstrate:
 1. That the student possesses the proper equipment and knows how to make it work;
 2. That the student has the skills needed to perform effectively in a writing-based medium; and
 3. That the student has motivation and realistic expectations.

7. Good practice in undergraduate education respects diverse talents and ways of learning

“The concept of ‘learning style’ has proved difficult to define and even more difficult to assess in terms of its implications for teaching practices” (Claxton & Murrell, 1987; Stark, Shaw, & Lowther, 1989, cited in Chickering & Gamson, 1991, p. 21). However, respect for diverse talents and ways of learning styles is not so much concerned with catering to each student’s strength as it is about defining a way of viewing the world. “This principal... may be the linchpin that holds the Seven Principles together” (Chickering & Gamson, 1991, p.21). Students bring to the course different talents, different styles of learning, different cultural and educational backgrounds, different expectations, different assumptions. As a matter of practicality, it is impossible to design a course that provides each student their ideal learning environment. “Despite inadequacies in our understanding of learning styles,... cumulative findings of research in this area do provide guidelines for practice. For example, some evidence suggests that when students learn about their own respective styles, they can increase their chances of success in courses. Also, a match between instructional methods and students’ learning styles can lead to improved learning. Finally, students can expand their repertoire of learning strategies, which is important to lifelong learning” (Claxton & Murrell, 1987, cited in Chickering & Gamson, 1991, p. 21).

Online learning with its toolbox of presentation techniques makes it possible to provide learning experiences in multiple formats. This does not mean that every lesson or learning module need be presented in every possible format. It does make it possible to present material across the course in many different formats, with the effect of providing some material to students in their preferred learning style while requiring them to experience other learning styles and to acquire additional learning skills, what Alley and Jansak term “intellectual cross-training” (2001, p. 14). Allowing students to learn at their own pace is almost built in to the online environment. Students can turn the flow of information on and off at will in the online environment, a situation that does not exist in the typical traditional classroom. In order to facilitate this ability, the instructor must break down units of study into smaller pieces to give students many opportunities to stop and reflect on what they are learning (Alley & Jansak, 2001). Project-based learning, rather than strictly sequenced learning activities, also allows students a great deal of latitude in choosing their preferred method of acquiring knowledge.

Students in online courses, even more so than in traditional courses, may come from around the globe. In a highly participatory course, this richness of diversity and background can bring a facet to the online course that may not exist in a traditional, place-bound course. Compensation may have to be made for students using second or third languages, for differing cultural expectations and practices, for differing expectations based on age and experience, for time differences, and for the multitude of other differences.

Some ways to respect diverse talents and ways of learning in online courses

adapted from Graham, et al. (2000)

- Allow students to shape their own coursework by choosing project topics.
- Attempt to learn about the different backgrounds and interests of the students.
- Encourage students to express their diverse points of view.
- Include learning exercises filled with real-life examples that represent diverse, unique perspectives.
- Encourage students from diverse backgrounds to collaborate on projects.
- When scheduling the course, consider the possible time zones it will reach.
- Limit the use of idioms and colloquialisms, or explain their meaning.

A special note about accessibility issues

Online courses are bound by the same rules as traditional courses by the Americans with Disabilities Act. This topic is beyond the scope of this paper, but some resources are:

Designing an Accessible Online Course

Web Content Accessibility Guidelines, www.w3.org/TR/WAI-WEBCONTENT/

Measuring Accessibility. "Bobby" is a software program that evaluates sites for accessibility. It is downloadable from the Center for Applied Special Technology (CAST), at www.cast.org/bobby/. Results from "Bobby" include a line-by-line site analysis with recommendations for improvement. Developers can also do manual checks by using a text-only browser such as Lynx" (Buggey, 2000, pp. 44-45).

Additional information on designing Web pages for persons who are blind or visually impaired can be accessed at www.scils.rutgers.edu/~mowalker/access05.htm

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