

AN INTRODUCTION TO TEACHING ONLINE

Erping Zhu
Patricia Payette
Deborah DeZure

Introduction

The proliferation of online teaching is rapidly changing the landscape of higher education as we know it. While networked learning offers us new opportunities to build collaboration and creativity into the teaching and learning process, these innovations pose numerous challenges. This paper explores key questions to consider when planning an online course and provides guidelines for effective instructional practices.

It is advisable that faculty first integrate technologies into face-to-face courses and become familiar with the online teaching environment before taking on the challenge of teaching mostly or totally online (Palloff & Pratt, 2001). Online teaching is a viable option for courses that focus on the development of students' cognitive abilities – ranging from acquisition of information to evaluation (Bloom, 1956). Such courses usually teach concepts and principles and engage students in discussions, debates, writing papers or reports, and problem solving. These teaching and learning activities can often work well online because they do not always require close observation or face-to-face interaction. Ideally, students enrolled in an online course need to be competent in using computers and navigating the Internet.

How Should an Online Course Be Designed and Evaluated?

A systematic and thoughtful approach to online course design is essential (Beaudin, 1999; Kearsley, 2002; Palloff & Pratt, 2001). Simply taking a face-to-face course and converting it into an online one is not likely to be successful (Whitlock, 2001). Instructors need to define their course goals and outcomes when designing an online course, just as they do when designing a face-to-face course. The course goals will then determine the choice of technology tools, which influence the format of the online activities and assessment techniques. For examples of how technology can be used to support specific learning objectives, see the table on page 5. During an online course, instructors must adapt their teaching methods to what is possible and practical in an online environment. Therefore, it is crucial that technology tools be employed to support the goals in any given course.

Erping Zhu is an Instructional Technology Specialist at the Center for Research on Learning and Teaching (CRLT) at the University of Michigan. She has a Ph.D. in Instructional Systems Technology.

Patricia Payette is a Program Associate at CRLT. She has a Ph.D. in English.

Deborah DeZure is the former Coordinator of Faculty Programs at CRLT. She has a Ph.D. in Interdisciplinary Humanities and Education.



CRLT Occasional Papers

Center for Research
on Learning and Teaching

University of Michigan

No. 18

How to assess student learning effectively in an online environment is one of the key issues that should be addressed during the design stage. An online course can have the same learning objectives and goals as a face-to-face course, but the methods for assessing student learning should be different. While multiple choice tests may be valid and reliable for in-class assessments, they may not be valid and reliable in an online environment in which it is more difficult to control for cheating. One solution is to use methods of assessment that document the students' unique approaches to problem-solving, not just the answers. For this reason, case studies offer a useful online assessment strategy in which students must provide support for their conclusions and reveal the process by which they determined their answers. As a general guideline, it is useful to use methods of assessment that reduce opportunities for cheating.

Designing the teaching evaluation instrument for an online course requires an approach similar to the evaluation design in a face-to-face course. In both scenarios, there are three dimensions that should be evaluated: 1) content expertise, 2) instructional delivery, and 3) course design (Cashin, 1989). In online teaching, however, there is another set of dimensions that relates directly to functioning in an online environment.

The following is a list of areas to consider when creating an online course and designing its evaluation instrument.

- **Course Content**
 - Coverage
 - Accuracy
 - Currency
- **Delivery of Instruction**
 - Appropriateness of technology tools used to deliver course materials (e.g., PowerPoint lectures, video conference, etc.)
 - Usefulness of course website (e.g., structure, interface, navigation, instructions to online activities)
- **Course Design**
 - Appropriately defined instructional goals and objectives
 - Effectiveness of learning activities
 - Appropriateness of assessment methods
 - Appropriateness of teaching methods
- **Communication and Interaction**
 - Adequate communication with students (via email, phone, and in office hours)
 - Availability to respond to student questions
 - Frequency of feedback during the course
 - Means of feedback in the learning process
 - Management and facilitation (e.g., discussions and conferences)

- **Student Time Spent on Learning Tasks**
 - Completion of specific learning tasks
 - Communication with the instructor and other students
 - Required reading and research
- **Assessment of Student Learning**
 - Clear communication of the nature, duration, and due date of all planned assessment methods
 - Employment of a wide range of assessment methods (e.g., tests, quizzes and exams; individual/group papers and projects)
 - Assessment as an integral part of student's learning experience (e.g., self-assessment and reflection activities)
 - Alignment of assessment with course goals

Various techniques and methods are available for collecting data in all of these areas. For example, peer review generates data for assessing the course content and course design. Student questionnaires, surveys, interviews, and instructor self-reports provide information on the effectiveness of the technology and delivery of instruction.

It is worth emphasizing that there is no single or simple way to evaluate online teaching. For the evaluation of this teaching to be reliable, valid, fair, and useful for further improvement of teaching and learning, instructors need to think carefully about the purposes of evaluation, to examine various aspects of teaching, and to use multiple methods to collect data.

How Much Instructor Training and Technology Support Does Online Teaching Require?

It is necessary to provide basic training for instructors who are teaching online courses. Training can be delivered through workshops or individual consultations and coaching. Some researchers suggest that training be required and that some part of that training be conducted online (Ko & Rossen, 2001) in order to give instructors the experience of being online learners.

Instructor training should include the following: software programs; online syllabi; online teaching strategies; similarities and differences of online teaching vs. traditional teaching; the online instructor's voice; course management challenges; organization of materials; strategies to promote participation and facilitate interaction; and the integration of resources (Ko & Rossen, 2001). Training is also necessary to introduce students to software packages, basic technology skills, the online learning environment, and issues related to online learning, such as expectations for student responsibilities online. Just as there is a need for guidelines for civility in the classroom, there is also a need for guidelines that promote a respectful environment online.

Technical problems – whose job are they? Student computer hardware and software may not be compatible with an institution’s technology configuration. Student skills in using technology may also vary greatly. When technical problems occur, the instructor is often the first to know, but that does not mean the instructor should have to provide the required technical support. Instructors who teach online need to be technologically competent, but they should not be the primary source of technical support to train students, troubleshoot, and solve students’ technical problems. Therefore, extensive computer facilities and technical staff should be available to support online courses. The training and support systems and other services for online students must be at least as complete and responsive as those provided for on-campus students. For example:

- Various means of obtaining technology skills should be available to students who need to improve their skills before starting the online course.
- Basic computer hardware and software requirements for taking an online course should be clearly explained to students prior to their enrollment in an online course.
- Students in geographically diverse locations and different time zones should be able to access the technical support as effectively as those students on campus.
- Online instructors should have access to adequate support for online course design, development, and delivery.
- Online students should have access to libraries and other course-related resources that are available to students on campus (e.g., through a password-protected set of online reserve readings).
- Student advising and other services should also be accessible to online students.

What Do Teacher-Centered and Student-Centered Approaches Look Like in an Online Environment?

Internet and Web-based communication technologies support various activities that range from delivering and distributing information to offering complex networked learning and enable varied approaches to online teaching. The following hypothetical examples illustrate three basic approaches to teaching online courses, ranging from *teacher-centered* to *student-centered* and from *limited interaction* among and between students and faculty, to *high levels of interaction*.

A Teacher-Centered Approach with Limited Interaction. In an online science course of 40 students, the instructor uses the Internet for accessing course materials and posting

course assignments that focus on individual student efforts, such as reading and submitting papers. There are no required campus meetings for this course. Eight homework assignments and two tests constitute the course grade. During a normal week, the instructor receives approximately 20 email questions about homework assignments. The instructor devotes 4-5 hours per week to teaching this online course. The demand for the instructor’s time increased only during the weeks before each test. Students in this course spend most of their learning time studying and working independently. This course is characterized by a very low level of dialogue and limited interaction among and between students and the instructor.

A Mixture of Teacher-Centered and Student-Centered Approaches with Moderate Levels of Interaction. In an online health science course of 30 students, the instructor uses the Internet for transmitting course-related information and resources and for involving students in interactive learning tasks that require dialogue and interaction. The instructor encourages students to share, analyze, and compare their perspectives about various health issues. The instructor assigns weekly readings and topics for the online discussions, which account for 30% of the course grade. Each student is required to contribute a minimum of two messages per week to the online discussion. The student group project and the final examination contribute to the overall course grade. The group project involves students deciding on issues to investigate and then going to local health care providers to observe and gather data. The groups use online discussion tools to share data and observation logs and to hold multi-group discussions. Instead of holding office hours, the instructor periodically uses the Internet chat forum to converse with students, but the chat session is not required for every student. During the week, the instructor usually has to read and respond to over 60 messages. The instructor selectively responds to students’ messages each week, but consistently sends out one message to the whole class, commenting on the quality of online messages and the week’s online discussion. The class meets three times on campus – at the beginning, during the group project presentation, and for the final exam. The Internet technologies in this online course are more than tools for distributing materials; they are tools that facilitate interaction between students and the instructor and among students themselves.

A Student-Centered Approach With High Levels of Interaction. In an online social science course of 15 students, the instructor uses the Internet as a networked learning environment and engages students in student-centered learning. This approach, which works best with highly

motivated and self-directed students, fosters a high level of dialogue and interaction. The instructor recommends readings for each week, leads the discussion during the first two weeks, and monitors how students lead the remaining online discussions. Students are encouraged to choose topics for discussions and initiate and summarize each discussion. The instructor participates in the weekly student-led discussion, guiding and mentoring students during the week as needed. The class meets on the first day of the course, when the instructor explains course requirements, student learning responsibilities, online learning technology, and basic course policies. The course grade is based on online discussion (40%), a report (20%), and a final paper (40%). The Web is used as a forum for discussion – a shared space for revision of ideas and displays of multiple perspectives and a “community of inquiry” through which students build new concepts and co-construct knowledge (McLoughlin, 2000; Selinger, 1998).

Of these three approaches, the first represents the traditional correspondence and teacher-centered approach, while the third reflects a more student-centered approach. The second approach incorporates both traditional and student-centered teaching methods and offers great flexibility in moving from the traditional model to the student-centered model. Online instructors, regardless of disciplines or technology skills, will need to decide which methods are appropriate for teaching their online courses.

How Do I Determine the Enrollment Cap for an Online Course?

Several factors should be considered when determining the enrollment cap for an online course. The level of dialogue and interaction in an online course can vary greatly. Focusing on individual effort, such as reading and submitting papers, results in a low level of interaction (Bedore, Bedore & Bedore, 1998), whereas emphasizing student-centered learning calls for a higher level of interaction. When students in a class of 30 engage in a higher level of dialogue and interaction, a reasonable number of messages to anticipate per student might range from two per week to ten or more, and the class weekly postings would, therefore, range from 60 to 300 or more (Palloff & Pratt, 1999). Each message that exhibits higher-order thinking would demand five minutes or more of the instructor’s attention. A class of 30 students with two messages per student would generate 60 messages for the instructor and demand 300 minutes of reading per week. When a class enrolls 60 or more students, an instructor’s ability to make a substantial time commitment to higher levels of dialogue can be diminished.

On the other hand, an instructor can handle a larger number of students if the course focuses on the students’ completion and submission of a few individual assignments, rather than on dialogue or interaction. A large online course could also be possible if an instructor teaches the course and leaves the student questions and discussions to graduate student instructors (GSIs) – similar to an instructor in a large lecture course in which GSIs lead discussion sections.

Online learning technologies offer great opportunities for increased levels of faculty-student interaction. For example, in a face-to-face discussion class of 25-30 students, it is not possible for each student to make quality contributions during each class discussion, and it is not feasible for the instructor to give each student individual attention during the discussion. However, in an online course, it is possible for each student to contribute to every class discussion and to get the instructor’s individual input and feedback. Exchanging basic information in an online course may take two to three minutes by email, while the same information may be shared within 30 seconds in an instructor-student conversation during a class break (Boettcher, 1998). Likewise, one hour of on-campus interactive lecture may need five hours to deliver or convey online. Although focused practice and ongoing training will help instructors gain experience and skills in online teaching and become more effective in managing and facilitating their courses, we cannot equate time required for face-to-face teaching to time demanded for online teaching because of the unique nature of online communication.

Recent survey research suggests that the demand on instructors’ time increases when they teach online (National Education Association, 2000), but there are also studies arguing that less time is needed for teaching at a “distance” (DiBiase, 2000). While the ideal number of students suggested by practitioners and researchers for an online course ranges from 10 to over 60 (Duckworth, 2002), the bottom line is that the right number of students for any given course depends on the factors discussed above.

Conclusion

While online courses are often said to be “for everyone, for every subject, for every instructor, and for a large number of students,” these assumptions are only conditionally true. A thorough understanding of online teaching is necessary when making decisions about which courses to offer, which instructors and which students should engage in online teaching and learning, and how many students to enroll. Distance learning makes education more flexible and widely available than ever. As educators, it is our responsibility to ensure that the teaching and learning that takes place online is as empowering and comprehensive as it is accessible.

Tool Types, Examples, and Instructional Uses (Zhu & Kaplan, 2002, p. 214).

Type	<u>Example</u>	<u>Instructional Use</u>
Communication		
<ul style="list-style-type: none"> • One to one • One to many • Many to many 	Email, telephone, Bulletin board, listserv, tele-conference & videoconference, Web conferencing software, Internet Relay Chat (IRC)	Presenting information, Integrating information, Interacting and collaborating.
Organization & Presentation		
<ul style="list-style-type: none"> • Text • Text/Graphic • Text/Graphic/Animation 	PowerPoint, Inspiration, SmartDraw, Semantic networking tools, Gif Construction/Builder, Fireworks, Flash	Presenting information, Integrating information.
Information Search & Resource Management		
<ul style="list-style-type: none"> • Information searching <ul style="list-style-type: none"> Local access World-wide access • Information managing 	Web, Internet Electronic databases (such as MathSci Database, Wilson Indexes, and ERIC database), Procite, EndNote	Presenting, integrating, and manipulating information.
Audio & Video Technology		
<ul style="list-style-type: none"> • Analog • Digital 	Audio/videotape, Compact audio/videodisc, Digital audio/video, Streaming audio/video	Presenting information, Integrating information.
Web-based Course Management System		
<ul style="list-style-type: none"> • Commercial product • Non-commercial product 	Blackboard, Web-CT, Web-Course in a Box, TopClass, UM.CourseTools	Presenting information, Integrating information, Interacting and collaborating.
Creation & Manipulation		
<ul style="list-style-type: none"> • Simple text and graphic • Multimedia 	Databases, statistical packages, ToolBook, Authorware, Director, HTML editors	Presenting, integrating, applying, manipulating, and making sense of information/data, Interacting and collaborating.
Disciplinary Software Programs & Tutorials in		
<ul style="list-style-type: none"> • Arts & Sciences • Humanities and others 	Math, science, and language software programs	Presenting, integrating, reinforcing, and applying information.
Distance Learning Systems		
<ul style="list-style-type: none"> • Television-based • Internet-based 	Interactive television conference, Web-based audio/videoconference	Presenting information and delivering instruction to remote learners.

References

- Bedore, G. L., Bedore, M. R., & Bedore, G. L., Jr. (1998). *Online education: The future is now*. Phoenix, AZ: Socrates Distance Learning Technologies Group.
- Beaudin, B. P. (1999, November). Keeping online asynchronous discussions on topic. *Journal of Asynchronous Learning Networks* 3(2). Retrieved March 17, 2002, from http://www.aln.org/alnweb/journal/Vol3_issue2/beaudin.htm
- Bloom, B. S. (Ed.) (1956). *Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain*. New York: Longman, Green.
- Boettcher, J. (1998). How many students are "just right" in a web course? *Syllabus*, 12(1), 45-49.
- Cashin, W. E. (1989). Defining and evaluating college teaching. *IDEA Paper No. 21*. Retrieved May 10, 2002, from Kansas State University, Individual Development and Educational Assessment (IDEA) Website: http://www.idea.ksu.edu/papers/pdf/Idea_Paper_22.pdf
- DiBiase, D. (2000). Is distance teaching more work or less work? *The American Journal of Distance Education*, 14(3), 6-21.
- Duckworth, C. (2002). ISD for live E-learning. *Learning Circuits*. American Society for Training and Development (ASTD). Retrieved March 30, 2002, from <http://www.learningcircuits.com/2001/apr2001/duckworth.html>
- Kearsley, G. (2002). Is online learning for everybody? *Education Technology*, 41(1), 41-44.
- Ko, S., & Rossen, S. (2001). *Teaching online: A practical guide*. Boston: Houghton Mifflin.
- McLoughlin, C. (2000). Beyond the halo effect: Investigating the quality of student learning online. In M. Wallace, A. Ellis, & D. Newton (Eds.), *Proceedings of the Moving Online Conference* (pp. 141-154). New South Wales, Australia: Southern Cross University.
- National Education Association. (2000). *A survey of traditional and distance learning higher education members*. Retrieved March 20, 2002 from <http://www.nea.org/he/abouthe/dlstudy.pdf>
- Paloff, R. M., & Pratt, P. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco: Jossey-Bass.
- Paloff, R. M., & Pratt, P. (2001). *Lessons learned from the cyberspace classroom: The realities of online teaching*. San Francisco: Jossey-Bass.
- Selinger, M. (1998). Forming a critical community through telematics. *Computers and Education*, 30(1/2), 23-30.
- Whitlock, Q. (2001). Course design for online learning – What's gone wrong. In J. Stephenson (Ed.), *Teaching and learning online: Pedagogies for new technologies* (pp. 182-191). London: Kogan Page.
- Zhu, E., & Kaplan, M. (2002). Technology and teaching. In W. J. McKeachie (Ed.), *Teaching Tips: Strategies, Research and Theory for College and University Teachers*. (pp. 204-223). Boston: Houghton Mifflin.

The *CRLT Occasional Papers* series is published on a variable schedule by the Center for Research on Learning and Teaching at the University of Michigan. Information about extra copies or back issues can be obtained by writing to: Publications, CRLT, 3300 School of Education Building, Ann Arbor, MI 48109-1259.

Copyright 2003 The University of Michigan

CRLT Occasional Paper No. 18

**Center for Research
on Learning and Teaching**

University of Michigan
3300 School of Education Bldg.
Ann Arbor, MI 48109-1259
<http://www.crlt.umich.edu>