

A BEGINNER'S GUIDE TO ONLINE EDUCATION

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There are many variations of online education, as evidenced by the many terms used in the industry. Online education is a broad term that is typically used by academia to reference the collection of resources (including people and software), and their online implementation, used to facilitate the transfer of knowledge via the internet. E-learning is used largely by industry to reference online learning for continuing education (such as licensure purposes) or for corporate training. These courses are usually geared for self-learning and even self-assessment. Distance learning, or distance education, is about geography—it focuses on the fact that instructors and students are separated by physical space. In addition to geography, instructors and learners can also be separated by time. When curricula are developed for learners to engage in education at a later time, the course is called asynchronous.

An online course is done strictly online and involves no face-to-face meetings. But whether a course is delivered face-to-face or online, the goal is the same:

the successful transfer of knowledge. Instructor facilitation, however, is very different online compared with a traditional course. Online education is not just videoing a chalk- or whiteboard lecture and posting it online for students to watch. Online, a lecture can't be adjusted on-the-fly when students look confused, as it can be in the classroom. An online course requires different strategies about how to engage students and provides opportunities for them to interact with each other and the instructor. In a classroom, I feed off the energy from students, which can be missing in the online environment. In a classroom, I can revive them if they are not paying attention—not so online. But there are clear advantages, as stated earlier, of online delivery. In the following sections, some best practices, tips, and things to consider when designing an online course are suggested.

Best Practices for Online Course Organization

- Have a clear entry point to the course (such as, "Start here") to get students on the right path.

- Be clear about where students need to go next.
- Make links open in a new window.
- Put most recent items on the top of lists or folder items.
- Provide a calendar of assignment due dates.

Things for Instructors to Think About

- Creating an online communication plan: how will you communicate, and will students need special hardware, software, or connections? Consider online chats, discussion boards, journals, and/or video conferences.
- Cheating: how will you deter or prevent it?
- Proctoring: will exams need to be proctored by the university's testing center, by you, or by an authorized person?
- Generating the volume of content: does the university have guidelines to ensure that the course is consistent with the number of credit hours assigned to it? (In a traditional course, this is defined by the number of "contact hours" or hours spent in the classroom.)
- Reusing content: when preparing instructional materials, be careful to avoid dating the materials, so that they can be easily reused in the future. An exception is when referring to a specific version of a code or specification—that should always be done.

Learning Units

A learning unit can be based on a topic or series of related topics. Creating learning units for online delivery is similar to the traditional approach. A suggested process for creating learning units is as follows:

1. Set goals and learning objectives for the course and individual topics. Objectives should describe outcomes

	ONLINE	vs.	TRADITIONAL
For the PROFESSOR			
Preparation	Thoroughness and completeness can be more assured		More subject to miscommunication or mistakes
Content	Pre-determined and structured		Adjustable in the classroom
Time (e.g. to create a single traditional lecture, from this author's experience)	15 hours to develop video. Video can be reused over and over until updates are needed.		Initial delivery: 3-4 hours preparation time. Each semester: 0.5 hours preparation before class + 1 hour in class.
For the STUDENT			
Time (to view content of a single traditional lecture or equivalent)	Watch a 15-minute video and read any supplementary materials		Attend 1-hour lecture + commute time
Repeatability	May rewatch as many times as needed		Cannot rewatch physical lecture unless it was recorded
Convenience / Scheduling	Flexible. Can be self-paced.		Constrained by time and location
Learning Style	Requires independent learning and self motivation		May accommodate dependent learners
For the STUDENT and PROFESSOR			
Interaction	Virtual (online chat; discussion board; journal entries; video conferences; email)		Instant (face-to-face; office hours)

Comparison of a course delivered online with a course delivered by the traditional method from the perspectives of a professor and student. All Figures: Michelle Rambo-Roddenberry.

that are measurable—this is good educational pedagogy for any course, whether face-to-face or online. Objectives should not contain the words learn, appreciate, understand, or know, because these cannot be measured. Instead, consider using words such as identify, explain, solve, interpret, define, or summarize.

2. Develop content that supports the learning objectives. Gather or create supportive visuals (such as photos, sketches, or links to internet content).
3. Create an outline of the learning units.
4. For each learning unit, plan the sequence of study (such as first do this, then read that, then watch this)
5. Decide on delivery media (PowerPoint slides, video, web content, textbook excerpts, or book chapters) for each topic and prepare materials.
6. Decide how to assess student learning.
7. Prepare an engagement activity, such as a discussion board.

Be flexible about the length of a learning unit; the length should suit the content, not necessarily be equivalent to a typical class session. For example, one topic may be suitable for a 10-minute video, while another may need 30 minutes. Or, a PowerPoint presentation may require an hour of review. If a topic will be longer than usual, warn your students ahead of time so they can plan their schedules accordingly.

Get Help

Seek help from others who have taught online, attend workshops offered by your university, or even look for resources online. My university's Office of Distance Learning (ODL) provides excellent support to professors and holds workshops for instructors on the following topics:

- Course organization and content delivery
- Communication and engagement
- Assessment and evaluation

Peer Review

A peer review of your course design can help identify shortcomings. My university uses rubrics from Quality Matters Inc. (QM), an international organization that promotes and improves the quality of online education and student learning by, for example, developing quality



Week 3 – Agencies, References, and Specifications

Enabled: Statistics Tracking

Goals and Outcomes: To be exposed to the agencies that are related to the field of bridge engineering, and to identify their missions and roles. To learn the history of AASHTO and AASHTO Bridge Design Specifications, and to explain why design codes change.

Sequence of Study:

1. First, listen to the short AGENCIES AND REFERENCES audio file. Nothing technical here. Just a quick introduction to the week.
2. Then, review the AGENCIES (PDF) file at your own pace. Explore websites for the agencies to find out more about them. You might stumble upon something interesting.
3. In the Assignments folder, complete the AGENCIES Assignment. (It's an online quiz, but you may use the Internet to answer the questions.)
4. Next, review the REFERENCES (PDF) file at your own pace.
5. Then, view the BRIDGE SPECIFICATIONS video.
6. By **midnight on Sunday, September 15**, Reply to "Discussion Board, Week 3" Forum and view others' posts.

Example of an online module for a bridge engineering course.

standards and evaluation tools and procedures. QM has a faculty-centered peer-review process that is designed to certify the quality of online and blended courses. It focuses on course design and the student learning experience, not on faculty performance or delivery. The QM rubrics assess items such as course learning objectives, assessment and measurement, instructional materials, and learner interaction and engagement.

My Experience

To prepare for the facilitation of my first online course, I attended workshops on online learning held by my university's ODL. I decided to prepare scripted, voice-over PowerPoint presentations on all of the course topics, rather than point a video camera at me lecturing with a whiteboard. I gathered all of my books, references, specifications, and course notes, spread them over the dining room table, and got to work organizing the lectures.

For several weeks, I prepared one lecture at a time. It took about one hour to prepare the slides and script for each minute of PowerPoint presentation. However, I found that a 15-minute PowerPoint presentation covered the same material that I would normally cover in an hour-long lecture. (I'm probably slow; try it for yourself.) Even though the PowerPoint-presentation recording took a long time to prepare, I figured I was saving my students time by delivering content efficiently.

Using the QM rubrics, my university's ODL provided feedback: "Good features to keep: Learning objectives are nicely written and measurable. Nice mix of interesting assignments that are also practical and effective. The videos are

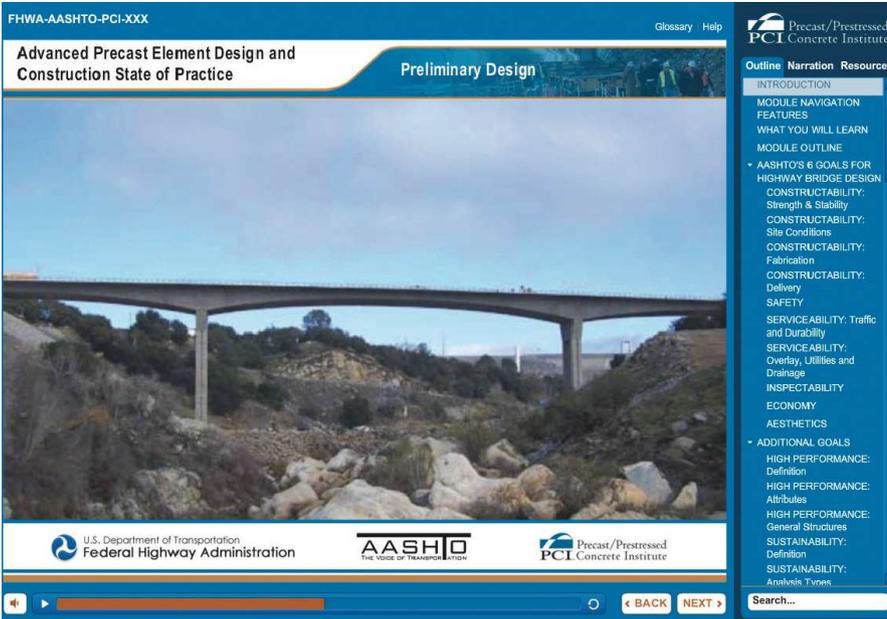
well narrated with a good speaking voice and rate. To improve: Make sure that discussion board assignments are included on a regular basis so that students have an opportunity to interact with each other as well as with you." (My aversion to social-media-type communication was exposed.)

A Blended Approach

My experience with graduate students is that they want to learn more direct applications of principles. Their education has progressed well beyond memorization, learning basic concepts, or simply solving problems using equations. They are less tolerant of ill-defined expectations than undergraduate students are.

After several years of university teaching, I no longer feel obligated to talk incessantly and fill up the whiteboard for every lecture. There are other ways a teacher can facilitate knowledge. Instead, sometimes I will ask students to do an in-class activity. It feels like less material is being covered, but because the students are challenged to think on their own, their understanding is deepened. It's better for the student, and it's easier on the teacher. Having students work together in the classroom means that I can guide and direct them to understanding, and I leave class knowing better what they did and didn't understand.

This semester, in my face-to-face Bridge Engineering course, I provided students with some of those voice-over PowerPoint videos. These videos either provided extra content on nontechnical topics such as bridge aesthetics (worthy of pajama viewing), replaced face-to-face lectures when I was unable to attend class due to travel for



Screenshot of a "Bridge Specifications" video for students to view as part of a course module.

research, or replicated my face-to-face lectures for particularly complex topics. This would be classified as a web-enhanced course or blended course.

The following is some feedback based on students' comments about the teaching strategies used in the course:

- They enjoy having time to ponder and discuss topics that are presented on the whiteboard.
- They like a slower pace that allows for deeper learning.
- They dislike intensive taking of notes. They want to focus on processing the content, but say they have trouble keeping up with writing notes at the same time. However, they also dislike it when professors deliver lectures only with a PowerPoint projection.
- They learned from the in-class exercises (in which I talked less and facilitated more). They enjoyed seeing how other students approached problem solving. They say this also enabled them to self-assess their learning—to see if they could solve the problem on their own, rather than having it all presented to them on the board. (I was afraid they would ask for a refund because I didn't talk as much.)
- Students overwhelmingly said they prefer face-to-face courses to strictly

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online courses for several reasons. They can ask questions on-the-spot, as soon as they come to mind. They reported a tendency to procrastinate a lot more with online classes. Rather than participating in online discussion boards, such as commenting on other students' work, they would rather work together in class.

- They very much enjoyed having a face-to-face lecture along with a prepared video lecture. The repetition, especially on complex topics, was helpful.
- They prefer videos that are 30 minutes or less.
- They did not watch videos for which I did not give an assignment. I don't know why that surprised me. (I'm blessed that my students are honest with me, but cursed because now I know the truth: ignorance really can be bliss.)

Tips for Preparing Voice-Over PowerPoint Lectures

Having now prepared many voice-over PowerPoint lectures, I offer the following tips:

- Spend time creating a well-prepared script before recording. This can greatly improve the learner's experience. To avoid sounding scripted during narration, I pretend that I'm talking to a student sitting beside me—the kind of student who would normally sit in the front of the class and ask thoughtful questions.
- Use a good microphone (I use a Blue Yeti USB microphone). Consider using a pop filter: it won't rid you of a southern accent, but it will improve sound quality. Don't use a karaoke mic; those never sound good.
- Make sure that crickets aren't chirping or dogs aren't barking outside during recordings.
- Avoid recording late in the day when your voice is tired. Drink water before narration and during pauses.
- Smile while narrating the script. Research shows that you can hear a smile.
- Invest in a good screen-capture software such as Camtasia. I use it to capture PowerPoint slides and transitions, as well as audio. Camtasia is easy to use and it converts files to a video format.

- If you want to go whole hog and create a professional module that includes embedded quizzes, outlines, narration text, and student interactivity features (such as clickable objects and pop-up windows), consider using software such as Adobe Captivate or Articulate Storyline to develop your modules. This can help enhance student engagement.

The preparation for teaching or facilitating an online course is different than for traditional face-to-face classroom delivery. Many of my tips can be applied to video conferences, professional presentations, or meetings with clients. As with many things, organization and preparation are key elements for a successful online teaching experience. 



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