Clinical Research Training Center

Teaching with Technology Manual

Teaching with Technology Manual: Clinical Research Training Center

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About this Manual

Welcome to the Clinical Research Training Center (CRTC) Teaching with Technology Manual. This manual has been developed as a toolkit for helping incorporate technology into your classroom or replacing your classroom with a technology enhanced alternative. The goal of this manual is to provide a brief introduction to a wide range of topics related to teaching with technology, followed by internet links to more details on each topic for those interested in investigating further.

We would like to express our appreciation to Washington University, UCollege and the School of Medicine Office of Medical Education, University of Missouri-St. Louis Center for Teaching and Learning, and the St. Charles Community College Office of Technology and Online Learning Support & Instructional Design and the Department of Computer Science for their assistance in sharing resources and guidance in the development of this manual. As technology is an always changing medium this manual is a continuous work in progress. Please provide any feedback and suggestions for future iterations of this manual to Jennifer McKanry, CRTC Manager – Curriculum and Evaluation.

> ## *"Technology is a tool for good instruction, not a replacement for it."*
>
> *-Monica Martinez, Dennis McGrath*

Throughout this manual you will see a ⭐ . This indicates a resource that is strongly recommended, very popular in the field of educational technology, or a growing trend here at Washington University.

HINT: Hold down the **CRTL** key and hit the **F** key to bring up a search window. Search the document for any term or concept you want to find more information on.

This manual contains many links to websites outside of Washington University. Washington University School of Medicine does not endorse or guarantee the accuracy of information contained on websites of non-affiliated external sources. Read the School of Medicine's Policy on Links to Third-Party Websites to learn more.

Terminology

Below are definitions of terms and concepts commonly used when talking about the adaptation of the educational environment. Any technology terms you are struggling with that are not covered in this manual? Check out Whatis.com Tech Target's list of terms.

Asynchronous

> Not synchronized or not occurring at the same time. Examples of asynchronous communication or training would be e-mail, discussion boards, or videotaped lessons student play at a time convenient to them.

Bleeding Edge Technology

This term is frequently used to describe very new technologies, often new to market and not well tested yet. It is meant to be similar to the terms "leading edge" and "cutting edge" but implying even newer. A person could also be described as "bleeding edge," usually meaning extremely innovative and on top of all the upcoming trends.

Blended or Hybrid Courses

A format that is becoming more popular is to hold classes that are a blend of an online and a traditional face-to-face class. Typically blended courses will have a number of times the classes are required to meet in person, generally fewer than a typical class. The remaining time is replaced with online requirements. The Online Learning Consortium (a professional organization dedicated to post-secondary online learning) defines blended learning as a course where 30 to 70 per cent of the instruction is delivered online. The advantage of this format is the ability to enjoy the benefits of the face to face format while incorporating the flexibility of the online teaching format.

Blog

A blog is a frequently updated online personal journal or diary. There are many free tools online that allow you to create and maintain your own blog. Most learning management systems also have a blog tool built in. You can use it to blog to your students. Or you can allow students to post and respond to each other, in which case it functions more like a discussion area. See the FAQs section of this manual for more details on when you might want to use a blog versus a discussion group.

Distance Learning

Distance learning is a method of study in which students participate synchronously from remote locations, typically involving lectures being broadcast over the Internet. It is also called distance education or teleconferencing.

Flipped Classroom

One popular new instructional strategy is to "flip" or reverse the teaching delivery. Although there are many variations, most people interpret a flipped classroom to mean the lecture is provided online to be viewed before class, and class time is spent working on applying the material (what would traditionally be homework). The advantage is having the instructor available to help with questions and peer teaching opportunities. One challenge of this model is students not doing the prep work, and therefore not being ready for the in class work. Instructors find themselves repeating the lecture in-class. Consider short basic quizzes at the beginning of class, or having student bring/e-mail questions to be discussed, this assures students do the preclass work.

In Situ Training

The dictionary definition of "in situ" is situated in the original, natural, or existing place or position. In the educational world this is typically adapted to mean that training should occur as close as possible to the actual environment where the learning will be applied. For example, when running a mock code simulation, it is ideal to be able to run it in a patient room on the ward the medical student or resident is going to be working. The closer the environment learning occurs to the actual application environment, the more environmental triggers will be coded into long term memory at the same time, thus resulting in a higher level of recall when needed.

Infographics

Graphic visual representations of information, data or knowledge intended to present information quickly and clearly. A good way to make your presentations or online courses is to present material in multiple modalities to help learners understand the material. See article "6 benefits of using Infographics."

Learning Management System

A Learning Management System (LMS) is a cloud based software application for the administration, documentation, tracking, reporting and delivery of electronic educational (also called e-learning) courses or training programs. Sometimes you will also hear this referred to as a course management system.

An LMS will typically have the following tools: announcements, syllabus, lessons, discussion forums, grade book, attendance tracking, course email, blogs, wikis, assessments (tests, quizzes, surveys), and document and link posting capabilities. Some have more advanced capacities such as live chat, workgroups and e-portfolios.

We currently have access to the Danforth LMS, a product called Blackboard. The Medical School has also newly adopted an LMS product called Canvas currently used with the Medical Students and which may be available to WU Masters' courses in the near future. Throughout this manual there are links to instructions for each of these products. Also see the technical support section of this manual for contact information for additional support.

Massive Open Online Course (MOOC)

MOOCs are a growing trend to provide course material free of charge to large numbers of people. Typically these are not for academic credit, although there is a move amongst some institutions who have started accepting MOOC courses for credit. Sometimes a certificate of completion can be received for a small fee. Some of the best known providers of MOOCs are Coursera, EdX, and Udacity.

Online Learning

Traditionally, online learning is considered a course available asynchronously through a learning management system where there is no in-person contact between the instructor and class participants. Online courses typically utilize tools such as discussion groups, wikis, blogs and course material repositories which are discussed in more detail in the online course section of this manual. Although traditionally thought of as completely asynchronous, some online courses will incorporate synchronous components such as chatrooms or Skype sessions as well.

Open Educational Resources (OER)

More and more resources are becoming part of the public collective of information. The nature of these open materials means that anyone can legally and freely copy, use, adapt and re-share them. Therefore, you can often take advantage of these resources rather than developing your own materials for your courses. Later in this manual, links to some OER repositories are provided.

Pedagogy

In short, pedagogy is a discipline of research that deals with the theory and practice of education. The term is often used to mean the application of learning theory to the practice of teaching.

Synchronous

Existing or occurring at the same time. Examples of synchronous learning would be face-to-face classes, teleconference classes and live chats.

Wiki

A wiki is a website that allows collaborative editing of its content. Famous examples include Wikipedia and Wikihow. Most learning management systems also incorporate wiki tools what can be used for student interactions or group activities.

Presentation

We give presentations all the time. But are we being effective? Or are we just causing our audience to tune out? While long-term memory is virtually unlimited, there is a very limited capacity to working memory, which is the entry point. This is the reason why we absorb so little of what is presented to us didactically. The good news is there are two different channels through which information can move through working memory: auditory and visual. Use both and double the transfer capacity. But keep in mind that does not mean reading your slides. This strategy actually confuses working memory decreasing the amount of information absorbed. See the list below for suggestions to improve transfer to long-term memory.
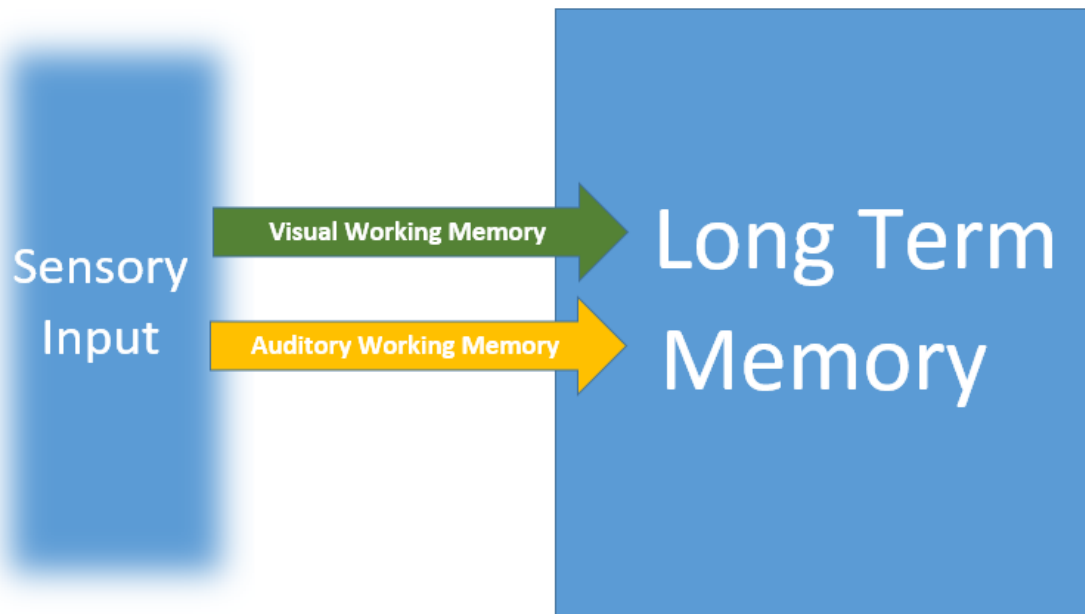
Tips to help your students maximize working memory capacity.
1. Keep it simple – reduce extraneous information
2. Signal the most important ideas or facts
3. Place words and aligned graphics close together
4. Reduce redundancy
5. Help students integrate visual and verbal information
6. Connect new knowledge to prior knowledge; show relationships
7. Engage students in active processing
8. Provide frequent breaks or incorporate an interactive exercise every 10-20 minutes

Source: Presentation by Gina Frey, PhD, WU Teaching Center, adapted from Mayer, R.E. (Nov. 2008). Applying the Science of Learning: Evidence-Based Principles for the Design of Multimedia Instruction. American Psychologist. 760-769.

PowerPoint

Microsoft's PowerPoint is one of the most frequently used presentation software. But it is rarely used effectively. For tips on using PowerPoint for medical research presentations see the video by Ed Wesibart, MD from Washington University volunteer faculty.

Prezi

Prezi is probably the second most popular presentation software. It creates presentations that "zoom in and out" instead of moving from slide to slide, providing a different kind of presentation experience. Here is an example of a Prezi presentation.

Audience Response Systems

Another technology frequently utilized to make lectures interactive is the audience response system (ARS). There are many different technologies but they all incorporate the same idea, posing questions to the students which they respond to by using keypads (often called clickers) or apps on their laptops, smartphones, or other mobile devices.

Questions posed can serve several purposes:

- Test for individual student knowledge
  Most systems identify a clicker response number. If you assign specific clickers to specific students you can track their individual responses. Most smartphone apps also have a way to track individuals or level responses anonymously.
- Test general class comprehension of a topic.
  Did the class understand what I just explained? Can I move on or should I go over that topic again?
- Poll the class for what order or direction they want to cover a topic in.
  Adult learning theory indicates that students are more engaged if they have control over their own learning.

For more on how to integrate an ARS see the article "Clickers in the Classroom: An Active learning Approach." Below are examples of just a few of the many polling software programs available.

TurningPoint

- TurningPoint utilizes keypads that are distributed to the audience.
- TurningPoint functions as an add-on to PowerPoint and allows you to incorporate polling slides into your presentation.
- The software can be downloaded for free.
- For CRTC related events, up to 150 keypads can be borrowed from the Infectious Diseases Division by e-mailing Susan Wightman.

  NOTE: TurningPoint is capable of exporting participant lists from your LMS (e.g., Blackboard, Canvas) and import results back into your LMS to sync up with your gradebook.

Poll Everywhere

Poll everywhere utilizes students' laptops, smartphones, or other mobile devices rather than using keypads. You enter your questions in the software application on your computer or imbed them into your PowerPoint. Students log into the app on their device to respond. Basic features are free, including up to 40 participants (if you have a higher educational account). More advanced features are available with paid accounts. This will require dependable Wifi in your classroom.

Plickers

This is a free, low technology way to incorporate ARS in the classroom. Paper "clickers" can be downloaded and printed. You then scan the papers using an app on your smartphone.

Socrative

This is a free polling software with some additional display and data collection features. No additional equipment is needed, students use their own devices to login and access the software. This will require dependable wifi in your classroom.

Online and Blended Courses

Learning Management Systems

The Learning Management System (LMS) is the software used to manage content, discussion groups, grading and general course organization. There are many different LMS products on the market currently. In the Washington University School of Medicine we are currently transitioning from Blackboard to Canvas. Therefore, throughout this manual "how to" links will be provided for both software systems. Some general help links are provided below. If you are unsure which software your course is housed in, contact Jennifer McKanry.

Blackboard
- ✓ Access URL
- ✓ Online help
- ✓ On campus support: WUSTL consolidated IT

Canvas
- ✓ Access URL
- ✓ Online help
- ✓ On campus support: Jason Crustals

Student Timing Requirements for Online/Blended vs. Face-to-Face Courses

For face-to-face classes, you need 15 hours of classroom time to equal each credit (e.g. a 3 credit course needs 45 hours of contact time). When designing online or blended classes, figuring out how this time is calculated becomes a little muddier. There is no ideal formula for calculating this. But in general it is expected the student would spend an equivalent amount of time actively engaged in online class activities **in addition** to the time it takes them to complete what would traditionally be considered homework and study time (e.g. read required materials, complete assignments, prepare for examinations). In the end, the online course should be equal in content and challenge to the face-to-face course and resulting in the same learning outcomes.

Tips for Newbies to Online Teaching

If you are new to teaching online, you might find this article helpful Pushing Through The Perils of Teaching Online.

Time Management

Because of the lack of face-to-face contact in an online environment, maintaining contact through other methods is key to keeping students engaged. However, this can be very time consuming. Below are some strategies to help manage your time when running an online course.
- Set specific office hours and stick to them. Encourage your students to reach you at that time either via the phone, Skype, Google Hangouts, or the method you are most comfortable with.
- Set expectations early. How long should students expect to wait for an e-mail response? Are you going to be responding to e-mails on weekends?
- If you do not plan to respond to e-mails on weekends, do not set Monday deadlines.
- Create a general question discussion group and answer common questions there to cut down on the number of e-mails.
- "Subscribe" to your discussion forums and blogs so you receive notifications when there are new postings.

- Have students submit their assignments via the learning management system to make keeping track of files easier. The gradebook will generate a "To Do" list for you to keep track of what still needs grading.
- Use the mobile app. Both Blackboard and Canvas have mobile apps. These can be helpful to download as they will allow you to keep up with responding to discussion board posts and assignment submissions.

Anticipate that your first week of class will be the busiest. Things you will most likely want to do in the first week:

- Send a welcome email a few days prior to the official course start date.
- Have the classroom set up with materials for the first module by day 1 of the course.
- Email trainees to announce the course start on day 1.
- Update the announcements page and also send announcements as e-mails.
- Send individual "behind the scenes" emails (thank students for participation, urge non-participators to join in, expand upon points that came up in class, troubleshoot technical issues, etc.).
- Update grades early.
- Monitor trainee logins via the analytics features to catch anyone having login or other access problems.
- Reply to discussion posts virtually every day.
- Work behind the scenes to prepare the next modules.

More Best Practice articles on time management:

- Got Time? A Time Management Strategy for Online Instructors
- Online Course Facilitation and Time Management (lots of videos included)
- Make Your Office Hours a Requirement
- Tips for Online Instructors: Managing Files, Feedback, and Workload

Communication

The key to successful communication online is clear, consistent, and concise writing and frequent contact. The areas where clarity and consistency are most crucial are labeling and instructions. Below are a few additional points to keep in mind regarding communication in the online teaching environment.

Tone in Student Communication Online

You can't rely on the same nonverbal communication techniques you use in a face-to-face class. Students can easily feel isolated or misunderstand your intent. The tone of your writing and expressions of encouragement will help learners understand your personality. Also consider adding video responses to help bring a personal tone to your communications with students. Most LMS allow you to record a video from within the system anywhere there is an option to provide feedback.

Formatting That Is Clear and Easy to Read

Remember that your messages will be read on the computer screen, or even smart phone. Here are some formatting tips preferable for lower resolution situations.

- Use sans-serif font (fonts without the "tails") such as Arial or Calibri.
- Avoid italics. Italic type is more difficult to read online because of the resolution.
- Only use underlining for web links.
- Always avoid ALL CAPS.
- Use color with care. It can be overwhelming for visual learners.
- Avoid large blocks of text. Be sure to break up with relevant images or white space.

English as a Second Language Students

Some students in your class are likely to not speak English as their first language. If this is the case, they rely on you to be sensitive to this. So this will be important to keep in mind in your communication to students and set requirements for online discussions or other assignments. Additionally, it is important to use culturally aware and sensitive examples. Do not assume a knowledge of US culture, TV, etc., in problems or scenarios students have to respond to.

Response Times for Student Communication

Timeliness of communication is key. Students need to have feedback between assignments and quick turnaround to questions so they can keep progressing. Set student expectations early for typical response time to e-mails and grading of assignments. Clarify if you are going to only respond during specific times or if you will not be available on weekends. Anticipate that most questions will come in right before assignment due dates. If you are not going to be responding to e-mails on weekends, do not make major assignments due on a Monday.

More suggestions for communication with online students.
- Article: What Online Teachers Need to Know
- Article: Instructor Characteristics That Affect Online Student Success
- Article: Creating a Sense of Instructor Presence in the Online Classroom

Course Organization

Engaging the Learner

An important key to providing a successful online course is keeping the learner engaged. A lecture only based course runs the risk of isolating the learner and resulting in a high dropout rate. To help build a community of engaged learners in the online classroom environment, consider developing activities in phases that help the learner become comfortable.

Phase	Learner Role	Instructor Role	Description
1	Newcomer	Social negotiator	Provide interactive activities that build a sense of community in the course. Instructor sets the tone for what is expected by providing examples and personal sharing in the initial exercises. **Examples: icebreakers, individual introductions, discussions concerning community**
2	Cooperator	Structural engineer	Instructor provides activities that require critical thinking, reflection, and sharing of ideas. **Examples: Peer reviews, activity critiques**
3	Collaborator	Facilitator	Instructor provides activities that require small group collaboration to solve problems and reflect on experiences. **Examples: content discussions, role playing, debates, jigsaws, concept maps**
4	Initiator/ partner	Community member/ challenger	Activities are learner-designed or learner-led. Discussion directions go where learners direct them to go. **Examples: Group presentations and projects, learner-facilitated discussions**

Source: Conrad, RM, Donaldson, JA, Engaging the Online Learner: Activities and Resources for Creative Instruction, John Wiley & Sons, Inc. 2011.

Course Appearance

The appearance and ease of interaction with your course will be key to student success, especially if the students are new to and/or intimidated by the use of online learning technology. Consider some of the following customizations to make the student experience smoother and more personal.

Customizing the course entry point (what students see when they first enter the course)
- ✓ [Blackboard](#)
- ✓ [Canvas](#)

Adding a profile picture
Another way to help personalize the online environment is to add your profile picture and encourage your students to do the same. This picture will appear next to all posts in the discussion boards and blogs.
- ✓ [Blackboard](#)
- ✓ [Canvas](#)

Controlling access to content
You may want to control when students can see certain pieces of content for various reasons. Below are a few common examples.
1. You want the students to complete certain item(s) before moving on to the next.
2. You do not want to overwhelm the students with all content at once.
3. You want certain content items to become available or unavailable on specific dates.

Most LMS allow you to set criteria, such as submission of specific items or reaching of a date and time, before content items become available in your course. Below are links for how to set this up.
- ✓ [Blackboard](#)
- ✓ Canvas: [Limiting by date](#), [Setting prerequisites](#)

Viewing your contact from the student perspective
As a course instructor you will see tools, menus and other content not visible to your students. It is also important to check the course view from a student perspective to make sure it appears as you expect it to. This is typically a pretty easy toggle in most LMS.
- ✓ [Blackboard](#)
- ✓ [Canvas](#)

Module Structure

Most online courses are structured in modules – discrete, self-contained learning experiences. A module might be one or two weeks of content, or may be structured by topic. For more information about using modular structure, review this article "[A Modular Course Design Benefits Online Instructor and Students](#)."

Orientation

Learning Objectives

Objectives are important in communicating your expectations of what is to be the focus of each module and the course overall. Most experts recommend having the action verb in each objective align with one of the levels of Bloom's Taxonomy; the higher the level, the more advanced the skill. Most importantly your learning objectives should align with your course activities.

o   Article: Writing Objectives Using Bloom's Taxonomy

Instructor Biography

Your biography is an important way to start establishing a relationship with your students. You can include a bio in your syllabus or in any of several places in your course. It can have a light, fun style or be more series. But most importantly, be sure to include it and that it reflects your personality.

A good bio should include:
1.   Your credentials
2.   Your picture
3.   Your teaching philosophy
4.   An explanation of your interest in the topic you are teaching

Some additional suggestions:
o   Article: Writing an Instructor Biography
o   Article: Making a Sparkling Instructor Bio Page

Syllabus

Once you've thought through how you plan to structure your online course you can start building the course syllabus. The syllabus is a particularly crucial communication tool in an online course. Consider including:
o   Technology Readiness Assessment
o   Time requirements for the course
o   Thorough details on deadlines and expectations

You can load your syllabus into your course in the document file of your preference, such as Word or PDF. Or you can build it as a web page directly within the LMS. Keep in mind how your students will be accessing the syllabus. Will they most likely be downloading and printing it? Or checking it in the LMS via mobile devices? That will help you decide which format will work best. You can always load it multiple ways. However, keep in mind this will create multiple versions to be maintained.

o   Syllabus checklist
o   Article: Creating an Effective Online Syllabus

Assessments

There are several built in assessment tools in most LMS. Below is a short summary of the most commonly used ones with details on how to use them in Blackboard and Canvas.

Tests/Quizzes

Hate grading tests? Let your LMS do it for you! Whether in a face-to-face setting or online the testing/quizzing features in LMS can go from risk free practice tests to high stakes tests with a restricted IP address or password protected testing. Some benefits of LMS tests include:

1. Automated grading – answers can be included in your question set up to allow auto grading of many types of questions. Typically essays are the only types of questions requiring your manual grading.
2. Immediate feedback – feedback text can also be built into your questions and you can control the level of how much students see and when.
3. Question pooling or banking – this feature allows you to create groups of questions by category and the test can pull the number of questions you specify from a larger pool.
4. Randomization of questions – each student can get a customized version of the test. Questions can be randomized in the entire test or within subsections.

- ✓ Blackboard
- ✓ Canvas

Discussion Boards

Since they are gradable, discussion boards can be used as assessment tools as well as ways to stimulate reflection and peer learning. Most grading tools now will filter board posts by students to help allow you to assess each student's contributions individually. If grading a discussion board, it is strongly recommended you use a standardized rubric. See the discussion board section of this manual for sample rubrics.
- ✓ Blackboard
- ✓ Canvas

Student Document Uploads

Another handy tool in your LMS is the ability to provide a centralized place for students to upload their assignments. This helps you keep track of submission documents. You can also assign points to the "assignment" which allows you to grade and provide feedback from your gradebook. Rubrics can also typically be associated with the assignment right in the grading tool.
- ✓ Blackboard
- ✓ Canvas

Plagiarism Checking

Most LMS have built in tools to check assignment submissions for plagiarism. Even if you are not delivering an entirely online class, you might still want to have your students submit their papers through the LMS to take advantage of this feature. Below are links for instructions on how to use this feature in Blackboard and Canvas.
- ✓ Blackboard (SafeAssign)
- ✓ Canvas (Turnitin)

Analytics

Another advantage of LMS is the ability to track student behaviors and identify patterns of struggling students in time to provide an intervention. They are also a helpful way to assess the effectiveness of your teaching. Below are links with more detail about how and when to utilize these tools.
- ✓ Blackboard
- ✓ Canvas

Discussion Boards

A very common tool used online to promote engagement and a sense of community is the use of discussion boards. This tool allows students to interact with each other and you in a somewhat structured way. Typically each week or module will have its own discussion forum set up with a specific question or topic to be discussed.

As you can imagine, discussions are much more than a place for students to answer questions. They are an opportunity to:
1. Build community
2. Establish a social presence, both yours and your students'
3. Give everyone the opportunity to contribute
4. Analyze, synthesize, summarize, consider, and confront ideas presented in the course readings and in others' posts

For more detail and ideas on how to incorporate a discussion group into your course, a great reference resource is the Discussion Group Manual published by Edutopia.
- ✓ Blackboard
- ✓ Canvas

Discussion Organization
There are multiple ways a discussion group can be set up.
- You can allow students to see and respond to other students' posts before they make an initial post. Or you can force them to make an initial post before they can see or respond to others.
- You can set up discussion groups that only a subset of your students can see. This is particularly helpful if they are doing group work by allowing each group to have an area where they can communicate with each other.
- You may want students to respond to a prompt question by citing the textbook or other outside resources they must find.

Discussion Deadlines
Note, it is common practice to set two separate deadlines for discussion group postings: 1) early deadline by which the students need to make an initial post; and 2) a slightly later deadline by which you require them to respond to a minimum of X number of other student posts.

Netiquette
Consider setting guidance on etiquette expectations for all online posts during the class. You might want to establish these early, including them in your syllabus and your orientation module. Looking for examples? Colorado State University has a good Netiquette: Guidelines for Online Discussions to use.

Creating Groups

Group work is another important way to facilitate the sense of community online. It is also important in general to stimulate peer learning. Details on some tools to facilitate group learning online are included in the links below.

✓ Blackboard
✓ Canvas

Announcements

Blackboard and Canvas both have announcement features. Announcements can be set up to both posts within the class and/or be e-mailed out. Multimedia features such as videos and web links can also be included in announcements in Canvas. This is usually the best way to communicate with your students because it reaches their e-mail and, depending on how you set up your class, appear right away when they first enter the course.

✓ Blackboard
✓ Canvas

Calendar

Calendar can give you a centralized place to list deadlines and other important dates for your students. Additional items you might want to include are: meetings, office hours, exam dates, guest speakers. Most LMS allow you to view calendar events by day, week, month, or agenda list.

✓ Blackboard
✓ Canvas

Attendance

In an online course, attendance is usually graded through the actions students perform online (contribute to discussion boards, upload materials, etc.). However you might have synchronous events for which attendance is graded, or you might be teaching a blended course and need to track attendance for your face to face component. If you are using the gradebook in your LMS to provide students feedback on how they are doing you will want to include the attendance credits in that gradebook. Below are details on how you can do that.

✓ Blackboard: Blackboard has recently added an attendance feature. However it is not yet integrated with the gradebook so you will separately need to give attendance credit in the gradebook if that is a component of your grade. See more details on using the Blackboard attendance add on.
✓ Canvas: The Canvas attendance feature allows you to enter attendance by class and tie it to the gradebook.

Grading

Prompt grading is critical in an online class because it allows students to apply recent feedback to the next assignment before it becomes due. It also reinforces the sense that the instructor is fully engaged and that the course is moving on. All of this discourages procrastination by creating the sense of missed opportunities for those who are falling behind. Along those same lines, you do not necessarily need to wait until the module is closed to begin grading. The only exception to this rule would be a discussion based assignment. Typically you want to wait to grade a discussion until it has closed and all submissions have been made.

✓ Blackboard
✓ Canvas

Article: Overcoming the #1 Complaint of Online Students: Poor Instructor Feedback

Rubrics

When grading, consider using a rubric. This serves both to make grading easier for you and to allow the students to know upfront what the expectations are and how their assignments will be grades. See this article on Rubrics to learn more about these tools and their usefulness.

HINT: If you set your rubric up in Blackboard, it can automatically calculate and distribute your percentage among categories and assign points to each column based on the percentages you set up (i.e., it does all the math for you!!).

When grading, you can select individual categories or click the button at the top of a column to select that entire column (i.e., competent) for the student. You can also opt to leave feedback notes for any of the selected grade items as seen in the screen capture below.

	Novice	Developing	Competent	Exceeds Expectations
Relevance	Points: 0 (0%) Description of topic did not seem related to the seminar session selected. Difficult to differentiate which seminar was being discussed.	Points: .43 (4.25%) Description of topic seemed to touch on some of the components discussed but did not show full comprehension of the material covered	✔ Points: 1.28 (12.75%) Description of topic showed accurate interpretation and understanding of the general concepts covered in the seminar Feedback:	Points: 1.7 (17%) Description of topic showed accurate interpretation and understanding of the material covered in the seminar
Reflection Questions (Listed in Syllabus)	Points: 0 (0%) Reflection questions were not addressed in the paper	Points: .43 (4.25%) One or two questions were address at least minimally	✔ Points: 1.28 (12.75%) All questions were address at a basic level Feedback:	Points: 1.7 (17%) All questions were address at a basic level with impressive elaboration in multiple areas

Grid View   List View

Below is an example of what a graded rubric looks like to the student in Blackboard if you display the points. You can also opt to not display the points. This particular example happens to be for a discussion group.

	Novice	Developing	Competent	Exceeds Expectations
Promptness and Initiative	**0** (0%) Does not respond to most postings; rarely participates freely	**.5** (5%) Responds to most postings several days after initial discussion; limited initiative	**1** (10%) Responds to most postings within a 24-hr period; requires occasional prompting to post	✔ **2** (20%) Consistently responds to postings in less than 24 hours; demonstrates good self-initiative
Delivery of Post	**0** (0%) Poor spelling and grammar in most posts; posts seem hasty	**.25** (2.5%) Errors in spelling and grammar evidenced in several posts	**.5** (5%) Few grammatical or spelling errors are noted in posts	✔ **1** (10%) Consistently uses grammatically correct posts with rare misspellings
Relevance of Post	**0** (0%) Posts topics which do not relate to the discussion content; makes short or irrelevant remarks	**.25** (2.5%) Occasionally posts off topic; most posts are short in length and offer no further insight into the topic	**.5** (5%) Frequently posts topics that are related to the discussion content; prompts further discussion of topic	✔ **1** (10%) Consistently posts topics related to discussion topic; cites additional references related to topic
Expression within the post	**0** (0%) Does not express opinions or ideas clearly, no connection to topic	**1** (10%) Unclear connection to topic evidenced in minimal expression of opinions or ideas	**2** (20%) Opinions and ideas are stated clearly with occasional lack of connection to topic	✔ **3** (30%) Expresses opinions and ideas in a clear and concise manner with obvious connection to topic
Contribution to the Learning Community	**0** (0%) Does not make effort to participate in learning community as it develops, seems indifferent	**1** (10%) Occasionally makes meaningful reflection on group's efforts; marginal effort to become involved with the group	**2** (20%) Frequently attempts to direct the discussion and to present relevant viewpoints for consideration by group; interacts freely	✔ **3** (30%) Aware of needs of community; frequently attempts to motivate the group discussion; presents creative approaches to topic

Source: Sample rubric from UMSL Center for Teaching and Learning

Grading Discussion Boards

When you go in to grade a student's discussion forum participation for a given forum, you will see all of his/her posts for that forum on one long screen. You will be able to re-read the posts at once in order to quickly assess the work. You will be presented with details regarding how many total posts the student submitted and how many words are in each post. You will see statistics on the student's average post position--how early s/he tends to participate in a discussion.

Rubrics can be particularly helpful in grading discussion posts. They allow you a structured way to analyze the posts and help communication expectations to students at the beginning of a course. If you do use a rubric, consider putting it in your syllabus.

Assessing Student Readiness

There are many trends now to include technology into teaching. While many of your students may be more comfortable with these technologies than you are, not all students are. Below are some items to consider.

Student Online Readiness Self-Assessment

For a fully online course a high level of comfort with technology, ability to work independently, and keep yourself organized are important skills for student success. Consider encouraging your students to take an online readiness self-assessment. Penn State has a good example online.

Technology Readiness Assessment

In addition to being ready for an online class themselves, students need to have the necessary technology to be successful. Consider including the following requirements in your syllabus for the course.

1. Dependable access to the internet
2. A webcam/microphone *(if you will be requiring video recording or teleconferencing in your course)*
3. Computer compatibility with
   - ✓ Blackboard
   - ✓ Canvas

Advice for First Time Online Students

Finally, here is a helpful article you can share with students on best strategies for being successful in an online course.

Video Recording

Recording Tips

- Keep videos short. 8-10 minutes is ideal. Definitely no longer than 20 minutes.
- Include your face in the video to help build connection with the student.
  - Some screen capture software, such as Screencast-o-matic, allow you to do this from within the software. See Screencast-o-matic instruction video.
- Do not reference specific textbooks, due dates, or assignments so you can reuse the videos.
- Have lighting in front of you if possible.
  - Tools such as Chat Light can be helpful if recording in a low light environment.
- Be aware of the quality of the audio.
  - Find a quiet location.
  - Remember to silence your phone before starting.
  - Do a test recording to make sure the audio can be clearly understood.
  - Consider purchasing (or borrowing from CRTC) a microphone instead of depending on the typically low quality microphone built into your computer.
- Be conscious of your pace. You should sound natural yet slow enough to be understood by a variety of learners. Keep in mind some of your learners will likely not be native English speakers.

Recording Software

There are many options out there for recording lectures. Below is a list of some of the most popular currently at WashU School of Medicine.

Software Name	Description
Camtasia	Available on CRTC classroom laptops which can be checked out for use.
Go To Meeting (WebX)	CRTC has a membership account that can be used when working with CRTC on a project.
⭐ Screencast-o-matic	Short videos can be recorded with a free account. Longer videos require a purchased account.
Twisted Wave	Simple and easy web-based voiceover editor, you can use it on your mac or iOS device or online.

Making Videos Interactive

Software exists that can intersperse questions or other text slides throughout your video. EDpuzzle or Nearpod are examples. Camtasia also has the ability to insert interactive slides. Contact Jennifer McKanry if interested in using either of these options.

Alternatively, you can make shorter videos with quizzes sprinkled in between in your LMS.

Posting Videos

Videos need to be housed on a streaming server and linked to from within your LMS. They typically cannot be housed in the LMS itself. Below are suggestions for loading and in Blackboard and Canvas.

- ✓ Blackboard: In Blackboard instructors typically use YouTube or use Wustlbox to house videos.
  - o Instructions for loading youtube videos.
  - o Instructions for loading Videos in WUSTLBox.
  - o Instructions for adding a link in Blackboard.
- ✓ Canvas: Canvas online learning system pairs with MediaCore to store and play videos.

Teleconferencing

There are many options out there for teleconferencing or synchronous meetings. Below is a list of some of the most popular currently at WashU School of Medicine.

Software Name	Description
Adobe Connect	Available through WashU School of Medicine AV department. Contact Tony Phillips for more information.
Go To Meeting	CRTC has a membership account that can be used when working with CRTC on a project. E-mail Jennifer McKanry for more information.
Skype	Available for free and requires minimal bandwith to use.
Zoom	Short videos can be recorded with a free account, longer videos require a purchased account.
Google Hangouts	Allows members to initiate and participate in text, voice or video chats, either one-on-one or in a group.

File Sharing

There may be many ways in which you need to share larger files, multiple files, or work collaboratively on documents. Below are some suggestions for file sharing software options that might be most useful and when.

Software Name	Description
⭐ WUSTL Box	• Post materials • Share access with on-campus and off-campus partners • Allows for collaborative editing • Owner can control access to just viewing or editing • HIPPA compliant
Blackboard	• Post materials • Allow student upload
Canvas	• Post materials • Allow student upload • Group editing through Google Docs
⭐ Google Docs	• Allows for collaborative file editing • Requires creation of a free Google account • Document owner invites other Google account holders to share the document • All changes are automatically saved • Great for student collaboration projects

Open Educational Resources (OER)

There are a lot of resources freely available online that can be incorporated into courses. Below are a few repositories to consider. For an interesting perspective on how you might involve students in the process of collecting OER resources for your course, see the article "OneClick Digital and the Medrano Project: OER as Content, OER as Pedagogy."

Software Name	Description
CRTC online resources	The CRTC is collecting online resources relevant to clinical research linked from their website.
Khan Academy	One of the best known resources for free online math and science lessons.
OER Commons	Dynamic digital library and network of educators dedicated to curriculum improvement.
OpenStax CNX	Connexions is a Content Commons, begun at Rice University, containing free open-licensed educational materials.
MIT OpenCourseWare	Full courses available online from MIT.
⭐ TED Talks	This is a diverse library of very short, very interesting talks given by the most innovative and interesting speakers in their fields. (FYI, TED stands for Technology, Education and Design!)
YouTube	One of the biggest collections of videos, housing a growing number of educational resources and lectures by leaders in the field.

Social Media

As the social media trend expands, you may want to become familiar with what these terms are when your students mention them, and consider incorporating some of them into your class.

Software Name	Description
Bonfyre	An event based app for sharing with others experiencing the same event or course.
Facebook	Free website that allows registered users to create profiles, upload photos and videos, send messages and keep in touch with friends, family and colleagues.
Flickr	Image and video hosting website, and web services suite.
Google Hangouts	Allows members to initiate and participate in text, voice or video chats, either one-on-one or in a group.
GroupMe	A mobile group messaging app owned by Microsoft.
Instagram	Photo-sharing, video-sharing, and social networking service that enables its users to share pictures and videos, publicly or privately on the app.
Linked in	Business-oriented social networking service.
Meetup	Allows like-minded individuals to meet for either business or social related interests.
Pinterest	Allows users to visually share, and discover new interests by "pinning" images, videos, website, articles to their own or others' boards.
Snapchat	Video or image messaging application. Users can set a time for how long recipients can view their "snaps".
Tumblr	Microblogging platform allows users to post multimedia and other content to a short-form blog. Known for its "dashboard" interface.
Twitter	Free microblogging service that allows registered members to broadcast short posts called tweets. Each tweet can be no longer than 140 characters.

Other Apps and Software

There are many add ons for Blackboard and Canvas that can make the interface more user friendly and help you with the course management. Below are some popular options.

Software Name	Description
Campuspack	A more user friendly interface for wikis, blogs, journals, podcasts, and templates.
Flipboard	Allows you to aggregate data feeds from multiple social media sources, or create a resource sharing area for relevant article and other resources within a specified group.
Imgflip	Creates image macros (sometimes called meme's) which are images superimposed with text for humorous effect.
Picktochart	A free way to create infographics for your presentations, online courses, etc.
Quia	An inexpensive tool that allows you to create games, puzzles, and many other online activities.
Reddit	A networking site where community members can submit content, such as posts or direct links. Users then vote submissions up or down to determine their position on the site's pages.
Slack	A messaging app, can also be used as a discussion group or dashboard for your course.
Sniping Tool	This is a free tool that comes with Windows and lets you capture a portion of your screen as an image. Great for grabbing things to incorporate into presentations, online courses, e-mails, instructions for students, etc. Yup, it's most likely already on the computer you are using and you probably didn't know it is there.

Voicethread	Allows for discussion groups to be video based instead of text only. Has free and premium subscription options.
Wordle	An application that creates "word clouds" based on the frequency of the words that are entered into the site. This is a great way to graphically demonstrate the most frequently used words within a text, survey response data, etc. Article on how to use a Word Cloud.

Applying Technology to Bloom's Taxonomy

Many of you have probably heard of Bloom's Taxonomy which defines six categories of skills and knowledge with increasingly sophisticated levels of understanding on behalf of the student. These can be very helpful in building learning objectives and evaluation strategies. If you are not familiar with this taxonomy, see Vanderbilt's description.

The graphic below gives some examples of technology that can be used for learning or evaluation exercises at each level of the taxonomy.
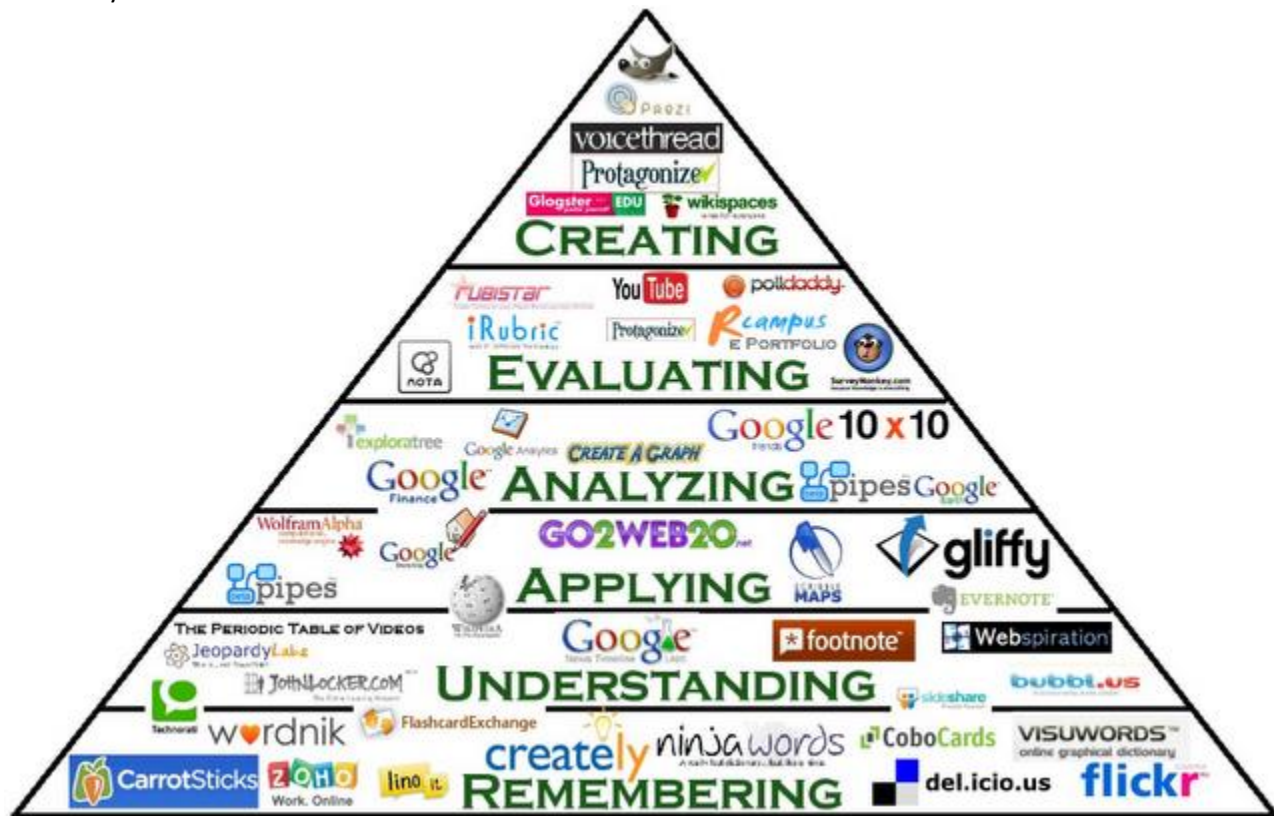
Source: Lichelle Leonard Technology Coach (note interactive version is available on their website)

Technical Support

Blackboard Resources

- WUSTL Blackboard link
- Blackboard help website
- Teaching Center Blackboard advice
- Technical on campus support contact WUSTL consolidated IT
- Assistance building online or hybrid courses for AHBR or MSCI contact Jennifer McKanry

Canvas Resources

- WUSTL Canvas link
- Canvas help website
- Technical on campus support contact Jason Crustals

Pedagogical Consulting Support and Workshops

- The Teaching Center

FAQs

What is the difference between a Blog and a Discussion?

1. There is no content editor for the comments in the blog area (cannot add links, emphasis, etc.).
2. Blog has a nice index to the right making navigation a little easier.
3. No cascading comments (can only comment on the blog entry, not on other comments to the blog).
4. Duke article on comparing wiki's and blogs.

When adding content in Blackboard, what is the difference between an Item, a Blank Page, and an Attachment?

Items: An item does not need to be clicked in order to view its content. It is visible at all times and, therefore, takes up more screen space than a simple link. For that reason, never post long texts as "items" to make more efficient use of the screen space.

Blank Page: When you have a longer bit of text or instructions, consider posting them on a blank page. This creates a separate web page for the information that students would access by clicking a link.

Attachments: This is a good option for long texts as well, but typically only use this method for documents that you expect students to print or forms you want them to fill out and return.

Can I copy an item in Blackboard?

Yes! Here are some simple instructions on how.

Is there a way I can link to a specific point in a YouTube Video?

Yes! All you have to do it add "&t=*X*m*Y*s" to the end of your URL, where *X*= the minute and *Y*= the second you want to link to. See this article for more details.

Should I allow my students to use their laptop or phone during class?

This is a question many teachers struggle with. Is the temptation too great for students to engage in non-class activities? Or is the value of letting them have these devices available to take notes, look up class related materials, etc., worth it? Or are they adults and we should let them choose?

The WU Teaching Center has a good article that discusses the pros and cons supported by research in this field.

Additional Resources

Like what is in this manual and want more? Below are some additional recommended resources.

Newsletters & Media Streams

- Faculty Focus has a great free newsletter that covers many topics on teaching with and without technology.
- The Learning Scientists have a great blog and dowloadable materials.
- EdSurge HigherEd has a great higher education blog.
- Follow the Teaching Center on twitter @WUSTLttc.
- Follow Jennifer McKanry on twitter @jmckanry.

Websites

Tips and Tricks for Teaching Online designed, developed, and maintained by Dr. Kaye Shelton from Lamar University.

Books

Boettcher, J.V., & Conrad, R.M. (2010). *The Online Teaching Survival Guide.* San Francisco, CA: Jossey-Bass

Conrad, R.M., & Donaldson, J.A. (2011). *Engaging the Online Learner: Activities and Resources for Creative Instruction*, San Francisco, CA: John Wiley & Sons, Inc.

Horton, S. (2005). *Access by Design: A Guide to Universal Usability for Web Designers*. Berkley, CA: New Riders.

Vai, M., & Sosulski, K. (2011). *Essentials of Online Course Design: A Standards-Based Guide.* New York, NY: Routledge.

Journal Articles

Mayer, R.E. (Nov. 2008). Applying the Science of Learning: Evidence-Based Principles for the Design of Multimedia Instruction. American Psychologist. 760-769.