

**Best Practices for Teaching with Emerging Technologies**  
**Second Edition**  
by **Michelle Pacansky-Brock**  
**Chapter 2: Towards Participatory Learning**



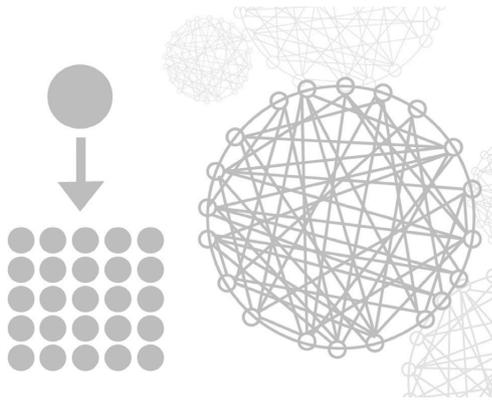
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For more information, please visit to book's resource site at [TeachingWithEmergingTech.com](http://TeachingWithEmergingTech.com).

Steve Hargadon, creator of Classroom 2.0 and the host of The Future of Education podcast series, illustrates the effect of our 21st-century life, peppered social technologies, as a massive wave.<sup>1</sup> If you take a moment to imagine the image of a large wave in your mind, the way you naturally construct your vantage point may communicate how you feel about emerging technologies, as well as your level of current participation. Do you picture that wave about to hit shore and destroy everything in its path? Are you cautiously watching it from a protected balcony? Or are you riding it, shrieking with excitement as its energy throws you off balance?

Riding the wave with expertise surely isn't everyone's objective but if you're reading this book, you clearly have some interest in submerging yourself a bit further. Typically, one of the most overwhelming elements of teaching with emerging technologies is deciding which tool or tools you should try. Note that I say, "try." Teaching with emerging technologies is, by nature, experimental and failure is an implicit step in an experiment. If we don't fail, we don't learn, and if we don't learn, we won't improve upon what we're already doing. And in the 21st century, improving upon a centuries-old tradition of teaching and learning is critical.



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*Figure 2.1* Lecture and participatory learning models. Image by Laurie Burruss. Reproduced with permission.

Still, failure is tough. And professors don't openly relish the opportunity to fail. Why would we? Professors are products of an educational culture that has taught us to discourage failure, to be ashamed of mistakes, to always be right. Grades are presumably evidence of successful learning and that relished 4.0 grade point average certainly doesn't include room for any failures at all. Low grades follow students, tarnishing their GPA and reducing their opportunities to apply for scholarships and other merit-based achievements and opportunities. The modern educational system and, in turn, western culture defines failure as something bad that should be avoided at all costs.

Ironically, brain research tells a much different story. Take a moment to reflect on something you are good at—cooking, painting, gardening, computer repair, fishing, negotiating, debating—anything. Think back to your experiences over the years, as you grew and developed your skills and expertise in this area. First, you wouldn't have had a chance to develop your skills only through reading about how to be proficient in this skill. You had to actively participate and give it a try. And as you reflect back on your growth, what was it that enabled you to improve? It was probably a new dish that tasted horrible, a color combination



that looked garish, a computer screen that didn't go on when it should have, the big fish that got away, a lost deal, a failed argument . . . you get the picture.

Now you might agree with that point when we consider it in the context of personal hobbies or everyday skills, but what about in your teaching? What motivates you in your role as a college instructor? How do you view your role in a classroom? Is it important to you to see your students succeed? Each college instructor will respond to these reflective questions differently and your response will provide valuable insights about your teaching paradigm.

Barr and Tagg's insightful article from 1995, "From Teaching to Learning," explores the characteristics of two distinct paradigms that operate in various ways throughout higher education: the teaching paradigm and the learning paradigm. Applying these ideas to your own classroom is an illuminating experience, as it encourages you to examine your teaching values and philosophy.

I find it helpful to imagine Barr and Tagg's instruction and learning paradigms at opposite ends of a continuum. Take a moment to review a few of the characteristics of each paradigm listed in Figure 2.2, reflect on your own values and motivation and identify where on the continuum your teaching lies.

Emerging technologies hold an array of opportunities for teachers committed to achieving the outcomes of a learning paradigm. By nature, social media, Web 2.0 tools, and mobile apps are participatory and easy to use. In short, they create a cascading array of opportunities for students to be active contributors in the learning process, yielding fabulous ideas for assessments and strategies for increasing student interaction.

It's also a good practice to identify where on the continuum the institution(s) at which you teach lies. Institutions demonstrate their priorities through policy and decision-making. And, often, an instructor who values the priorities of a learning paradigm but teaches at an



institution committed to the instruction paradigm finds oneself in a challenging situation.

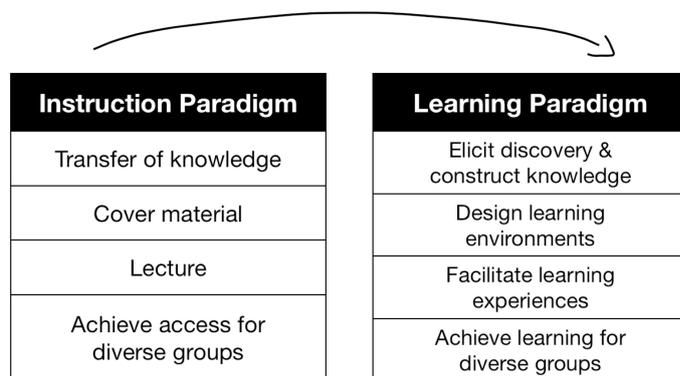


Figure 2.2 Instruction and learning paradigm charts.

I shared the Barr and Tagg model in a presentation I gave to a mostly-faculty audience at a very large, public university and the Twitter backchannel (a stream of real-time, brief messages sent by audience members from mobile devices in response to my presentation) included comments from instructors that questioned whether or not their institution would ever embrace the learning paradigm. The evidence they cited for this was the large size of their classes. The more students there are in a class, the more challenging it is to adopt the priorities of a learning paradigm. For example, designing a learning environment in a philosophy class that is targeted at eliciting discovery, constructing knowledge, and achieving specified learning results for a diverse student group requires an instructor to engage with students, have an understanding of who the students are, have a willingness to adapt and shift the direction of activities in response to the group's unique needs, make necessary accommodations for special needs within the group, and make an effort to arrange course content in a variety of ways including text, image, and video. The more students there are in a class and the more classes an instructor teaches, the more difficult it is for an instructor to master the learning paradigm, regardless of his or her personal teaching preferences and



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values.

But be creative! There are practices in motion that demonstrate how emerging technologies can introduce more active learning into even very large lecture classes. Elizabeth Sowers, a sociology professor at California State University, Channel Islands, was reluctant to integrate technology into her face-to-face Introduction to Sociology class, which enrolls about 100 students. She reflects, “I was worried that encouraging students to use technology in the classroom would lead to them checking out, surfing Facebook, or playing games rather than listening to lecture...” Despite these hesitations, Sowers made the choice to try TopHat in her class (see chapter 5 for more about TopHat). TopHat is a next-generation student response system. It is used similarly to how instructors have used “clickers” in classes to capture student feedback and assess knowledge during a lecture, but TopHat operates on a student’s own device (smartphone, tablet, or laptop). With her eyes set on increasing student engagement, Sowers has used TopHat for comprehension check questions, opinion questions, data interpretation questions, and as a way for small groups of students to report back after a breakout activity. TopHat has had a surprisingly positive impact on student engagement, says Sowers, citing that her students express appreciation for the opportunity to check their comprehension on topics; students find the opinion questions fun, because they provide opportunities to understand how their perspectives compare to those of their peers; and the use of TopHat, in general, breaks up the experience of listening to a lecture, which helps to keep them engaged.<sup>2</sup>

As products of our educational system, professors have traditionally been positioned as the experts with all the answers. Experimenting with new technologies in your teaching will require you to step into a new teaching paradigm that encourages and fosters a community of learners who are incentivized to work together and solve problems.



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So, expect to fall off that surfboard a few times as you begin to teach with emerging technologies, but view each of those slips as opportunities to grow and cultivate more effective, relevant learning experiences for your students.

## **The Value of Participating**

Ana Maria Barral started her career as a research scientist. After many years working in the private sector, she walked away from her title and security to teach college biology classes. It didn't take long for Ana to realize how scarce full-time faculty positions are and see that her new life, at least for the interim, was going to involve teaching classes at a variety of colleges and universities.

During Ana's transition, she found herself feeling as if she had lost her identity. She went from a formal title and institutionalized role to being affiliated with several colleges, not feeling like part of the "full-time" community at any of them. In an effort to improve her teaching, she registered for a face-to-face technology-based workshop. That face-to-face workshop gave her the skills to create video lectures that she could use to web-enhance her biology classes. But it also piqued her curiosity about technology and teaching and gave her the self-confidence to try new things.

Not long after that, Ana enrolled in my *Building Online Community with Social Media* class. This is a fully online class I taught for the @ONE Project, the same program that funded Ana's Camtasia workshop. @ONE is funded by a grant from the California Community College Chancellor's Office and offers professional development classes designed for community college instructors but used by K-12 and higher ed faculty from across the nation. In the class, instructors experimented with an array of social technologies



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and worked together in participatory environments to discuss and evaluate how the tools can be applied to online classes to foster a sense of community among learners. The first interaction I remember having with Ana was the week the participants were asked to create a Twitter account and start tweeting. She wrote to me expressing concerns about privacy and social media. In our exchanges, we talked through those concerns and I told her she shouldn't do anything she isn't comfortable with, but I wanted her to give it a shot. My advice was simple—don't share anything private (advice every user of social media should take to heart). Soon thereafter, I saw her first tweets surface. They continued with more and more frequency through the end of the class.

In the months that followed, Ana used Twitter to share resources she stumbled upon but also to follow research biologists, organizations, and educators around the world, many of whom followed her back. Quickly, her social media participation enabled her to curate her very own global network of users with shared interests. This Personal Learning Network (PLN) has changed Ana's life. Ana shared that while she was teaching for multiple institutions, her sense of isolation diminished as her use of social media increased. She has found a sense of community, a feeling of belonging—but also cultivated a dynamic network of individuals who she exchanged relevant teaching ideas and resources with and received help or advice about teaching-related problems.

Today, Ana still uses Twitter and has about 1,500 followers!

But tweeting wasn't Ana's only venture into the world of social technologies. She also became a blogger. She uses her blog as an open space to work through teaching experiments—writing about her ideas, summarizing her experiments, and then reflecting on how things went. Like her post, “From Boring to Blogging, Part 3,” in which she shared her newly created rubric for scoring her biology students' reflective blog posts that captured the



scaffolded development of their research. Her blog has opened her teaching process to the world, allowing anyone to learn with her through her journey into teaching with emerging technologies. And in the summer of 2016, Ana began a crowdfunding campaign (an online effort to raise funds through the use of social technologies) to raise money for a research project to explore the microbes attaching to floating plastic in coastal waters. A longterm goal of the study is to crowdsource data collection by having students and community organizations submit plastic samples from local waters.

I asked Ana how her teaching has changed, since she first embarked upon her use of Twitter. She said she feels like her teaching has transitioned from “black and white to full color.” “When I teach now, I feel like I am serving my students a buffet rather than a quick bite to eat.” She reflected on the ways that social media and Web 2.0 tools have potential to engage more students and extend confidence to learners who are traditionally marginalized through lecture and exam-oriented classes. “More of my students feel good about themselves.”

But this transformation did not occur without challenges. At one point, Ana was interested in encouraging her students to use their mobile phones to take pictures in their lab and use the images for web-based blogging and other assessments but her department at one of her institutions had a strict policy against use of cell phones in class. As a part-timer, these institutional policies were difficult to negotiate. In higher education, there are many traditionalists who do not see the value of turning a phone into a learning tool. Like psychologist Abraham Maslow said, “If you only have a hammer, you tend to see every problem as a nail.”

As a veteran researcher, Ana shared some intriguing perspectives about the broader implications of social media in the field of research. She noted, “We used to just have peer-



based research journals to share our findings. Today, we still have them but social media provides us with a space to experiment with global input. My blog and my Twitter users play a role in helping me work through my problems and learn from my failures. In the end, everything will be kicked up a few notches. It's exciting." Since the start of her teaching transformation, Ana was tapped by Carnegie Mellon to participate in a national review of an open online biology course and she has been hired to teach Biology full-time at National University.

Integrating social technologies into your teaching has potential to transform your pedagogy from linear transfer of knowledge to interconnected, participatory inquiry. But this journey begins with your active participation. Reluctance and vulnerability are natural responses to stepping into the social media arena. However, you will find that your efforts to embrace your vulnerability and try new things will open new pathways for your teaching, as well as your own lifelong learning.

## **Getting Started**

After you have experientially learned the potential that emerging technologies hold for your students' learning, you'll want to understand how to get started with integrating them into your teaching. This chapter provides a list of criteria for evaluating individual tools for use in your own teaching. But before we dig into the evaluation criteria, there are a few critical elements you should flesh out to eliminate messy surprises down the road.

Take some time to reflect on the following questions.

### ***1. What Function Will the Tool Serve in Your Class?***



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Identifying the function the tool will serve is essential and stresses a critical message about teaching with emerging technologies: a tool should always be used *in support of* pedagogy.

This first step may be difficult and, honestly, you may not have a crystal clear response to it at first but you are likely have some idea. Take some time to reflect on this question and even write a few paragraphs about how you envision your students' experience or your teaching approach to be enhanced or altered by an emerging technology.

Three common functional uses of emerging technologies in learning are:

1. Enhancing interaction between you and your students and/or between students themselves. (See Chapter 4.)
2. Creating online content for your class; for example, online presentations, demonstrations, lectures. (See Chapter 4.)
3. Creating a learning activity that integrates student-generated content and/or participatory learning. (See Chapter 5.)

If you are seeking a tool to facilitate a learning activity, you should keep some solid groundrules in mind about instructional design:

- Start with clear, measurable learning objectives.
- Select a tool that accommodates your objectives and is appropriate for the tasks or skills to be learned.
- Align your use of the tool with these objectives.
- Develop a rubric to assess your students' work.



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## *II. Who Will Use the Tool?*

Will the tool be used exclusively by you (for example, to create communications for your students or lecture content), or will students also use it (to create their own presentations or interact in a peer-to-peer learning environment, for example)?

If students will use the tool, you should plan to do the following.

### *Provide How-To Instructions*

Clear instructions must be shared with students from the start. These may, very well, already exist. Don't hesitate to share online instructions with students, especially if they're provided on the tool's website.

Part of teaching with emerging technologies is responding to frequent updates and redesigns of tool interfaces and new enhancements. Therefore, relying upon external help resources will lighten your load. You should only develop your own instructions to enhance and refine existing instructions. Think ahead, anticipate changes, and build a plan to save yourself time.

Also, search for instructional “how-to” videos in YouTube (you will likely find more than you imagined!) or consider creating screencasts (covered later in this book) that provide visually illustrated steps of how to use a tool. If you create screencasts, consider breaking up the process into short 1–2 minute steps, rather than one long “how-to” video. This enables students to focus easily on the step they have a question about and also facilitates easier updating later on.



Finally, consider sharing the content you develop on your blog, website, YouTube, Twitter, etc., with a Creative Commons license. Give back to the community that helps you.

### *Explain the Purpose*

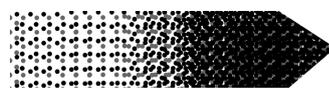
Along with “how-to” instructions, explain to students *why* you have integrated this tool. How will you use it to enhance their learning or increase their communication with you and/or their peers? As noted in Chapter 1, students appreciate understanding the context of a new tool when they are asked to use one.

### *Build in Opportunities for Student Feedback and Use Results to Make Improvements*

At the end of the course, survey students to evaluate how effective their learning experience was with the tool. Did it achieve the function or objective you had in mind? A scale combined with open-ended questions is an effective approach to measuring the effectiveness of the tool.

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## **2 TIPS FOR FEEDBACK**

### **#1 - GOOGLE FORMS FOR QUICK AND EASY STUDENT SURVEYS**

A Google Form (an option packaged within Google Docs, see Chapter 5 for more information) is a multipurpose tool. First, it’s a quick, intuitive, and free option for crafting surveys with visually pleasing themes that can be shared easily via a link, email, or embedded



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on a website. Second, the responses are compiled in real time into a Google Spreadsheet for easy viewing and evaluating. Responses can be viewed line by line in the online spreadsheet or you can view a visual summary of them if you prefer.

Get started with Google Forms at: [Docs.Google.com/Forms](https://docs.google.com/forms)

## **#2 - ANSWERGARDEN FOR SIMPLE FEEDBACK**

Sometimes a survey is more than you need. If you're looking for a quick, simple tool that you can embed into your course or website just to get a quick pulse check from your students about an issue, content, tool, or new activity you're trying out, consider AnswerGarden. Deemed a "scribble space" by its creators, it is a simple and flexible tool that can be used for feedback or for brainstorming. There are two steps in an AnswerGarden:

1) Create a new AnswerGarden by submitting a question or statement. From my experiences, you will have more success if you prompt your students to respond in "one word." You do not need to create an account, but you are advised to include a password for your AnswerGarden so you may edit it later if necessary.

2) Share the link to the empty AnswerGarden with your students or embed it in your course or website.

3) Students submit their answers by typing their response into the box (no sign-in is required) and their answers appear below the question in the form of a word cloud. The more frequently a response is received, the larger that word appears. You can sit and watch their responses grow your AnswerGarden!

4) Sometimes you may find that you do not want your students to see the previous responses to the question, as this may influence their ideas (this depends on the nature of your question or statement). If you prefer to hide the responses, but still make them viewable with



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She has students complete “Sample Communications & Group Work Form” to identify the type(s) of mobile devices and media technology (webcam, video recorder, or audio recording device) students possess. She also assesses the students’ self-perceived strengths (I am often the leader/editor/researcher in a group, I am good at creating multimedia, I am good at creating web-based media). To view this form, go to: [goo.gl/qRXKlg](http://goo.gl/qRXKlg).

Parra leverages this information to implement group work and particular tools that best support the students in each group. She is able to organize the students into groups more effectively by evenly distributing the self-identified leaders, editors, researchers, multimedia and web specialists.

At the end of the term, she implements a post-assessment to evaluate how the selected emerging technologies worked to support collaboration, as well as gather the students’ overall satisfaction with the tools.

When asked how the results of the survey were used in support of future online classes, Parra said:

[The results of this survey] confirmed my belief in the importance of the process that I have formally developed and implemented in my online courses. I have always supported my students with the development of technology skills and provided some scaffolding for group work. However, the more formal process that I have developed is supportive in my overall process of online course design and is something that I can share with others.

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### ***III. How Will Your Workload Be Affected?***

Encouraging students to create content with a Web 2.0 or social media tool is an effective way to assess learning, create relevant learning experiences more likely to foster deep



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learning, and develop critical thinking skills.

But if you are planning to have your students create content with social media or a Web 2.0 tool, plan ahead to ensure you have a clear understanding of how your workload may be affected. Here are some things to consider.

### *Your Participation Level*

Effective, regular contact with your students is an important component of student success, especially if you are teaching online. Will your adoption of a new tool increase your need to actively contribute in your classes? Will there be additional areas where students may ask questions, for example, that you will need to monitor?

### *Class Size*

The number of students in your class(es) will directly drive the amount of time it takes for you to monitor and evaluate the content created by your students. If you have large classes, think creatively about how you will assess the student-generated work.

### *Frequency of Assessment*

How often will your students be using the tool? Weekly? Bi-weekly? Will you evaluate each student's work every time the tool is used?



## **THE NUDGE SYSTEM FOR GRADING BLOG POSTS**



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A blog is a terrific way to integrate reflective writing and other creative activities into your students' learning. But often professors feel overwhelmed by the need to assess every blog post. Here is a creative grading strategy that *may* help!

Let's say you assign a weekly blog post in three classes. Each class has 40 students in it. That means you have 120 posts to assess each week on top of other duties. Rather than telling your students you'll grade the blog posts each week, schedule two dates in your term when the blogs will be assessed—midterm and end of term work well.

Then, between the formal and comprehensive grading periods, inform your students that you will visit a handful of blogs each week to verify they are current and you will leave comments for those students too (your comments will motivate your students and show that you are present). If you identify a blog that is missing a post, leave a “nudge comment” on the student's blog. The nudge is phrased something like this: “Your blog posts are looking great but I am delivering a ‘nudge’ because you are missing our most recent post, [insert post title here]. We are all looking forward to seeing it soon!”

Each time a student receives a nudge, it is an automatic point deduction that will be incurred when the blogs are graded. It's a good idea to keep a simple list tally of nudges (perhaps on a spreadsheet used for grading notes). This is helpful just in case someone elects to delete your nudge comment.

The system worked well in my class. The deduction for a nudge was significant (5% of half the term's blog grade, so two nudges would drop a student an entire letter grade) and students who received nudges were very responsive and got back on track quickly.

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## Checklist for Evaluating Tools



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After fleshing out your responses to the questions listed above, you may already be considering a few different tools. So, how do you decide which one to implement into your class? There is no magical answer but you will find that evaluating each tool against a set of criteria is a good practice to integrate into your workflow. The following checklist was inspired by Bethany Bovard’s clean, useful “Web 2.0 Selection Criteria,” which you can find at: [TekTrek.wordpress.com/2009/03/02/web-20-selection-criteria/](http://TekTrek.wordpress.com/2009/03/02/web-20-selection-criteria/).

### ***1. Accessibility: Can All Students Access the Tool or Content?***

- Is the tool accessible by Windows and Mac users?
- Is the tool or content viewable in a variety of web browsers?
- Does the tool work well for those with dial-up connections?
- Does the tool provide options that support ADA compliance? If not, what are the gaps and how will you support them?
- Does the tool have a mobile app (or plans for a mobile app) for a variety of devices (iPhone, Android, iPad, etc.)?

Ensuring your course materials are accessible to all students, regardless of learning preference or difference, is an important priority for every instructor. In the United States, online course content must, by law, meet the criteria as outlined in Title II of the American with Disabilities Act, Section 508. When a face-to-face, hybrid, or online course utilizes static content (PDFs, Word docs, html pages, video files, etc.), the steps to fulfilling this criteria have been clearly established.<sup>3</sup> However, integrating emerging technologies into an online class can introduce quite a bit of murkiness, especially when those tools are being integrated with the explicit intent to foster learning through participation, rather than through



the traditional, passive transfer of knowledge.

To understand the importance and value of accessible web content, University of Washington encourages you to consider the following:<sup>4</sup>

- Most individuals who are blind use either audible output (products called *screen readers* that read web content using synthesized speech), or tactile output (a refreshable Braille device).
- Individuals with learning disabilities such as dyslexia may also use audible output.
- Individuals with low vision may use screen magnification software that allows them to zoom into a portion of the visual screen.
- Many others with less-than-perfect eyesight may enlarge the font on websites using standard browser functions, such as Ctrl + in Firefox and Internet Explorer 7 (Windows).
- Individuals with fine motor impairments may be unable to use a mouse, and instead rely exclusively on keyboard commands, or use assistive technologies such as speech recognition, head pointers, mouth sticks, or eye-gaze tracking systems.
- Individuals who are deaf or hard of hearing are unable to access audio content, so video needs to be captioned and audio needs to be transcribed.
- iPhone users navigate the web using a small screen and touch interface on a device that doesn't support Adobe Flash.

The High Tech Training Center in California, which supports California's 112 community colleges, offers a helpful model for instructors to evaluate the accessibility of content and it lends itself nicely to emerging technologies. Their model delineates "Three Cs" of accessibility: Container, Content and Capability.<sup>5</sup> This model illuminates the multiple



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layers that need to be considered when evaluating a tool’s ability to support all learners.

### *Container*

Does the tool (i.e. the “container”) support the use of assistive technologies (i.e. screen readers, text to voice dictation software, etc.)? If so, are there any features within the tool that do not support assistive technologies?

### *Content*

Is content authored outside the tool and imported into the tool accessible to all (images, video, a mind map, etc.)? The accessibility of the content is separate from the container itself. And, as explained by Keegan and Brown, “While the container itself may not be fully accessible, the externally authored content can provide the information necessary for using assistive computer technologies.”<sup>6</sup>

### *Capability*

Is the container capable of supporting the creation of accessible content?

This evaluative step is a difficult one for professors, as it requires expertise that most professors do not possess. Individual institutions are responsible for establishing a process for course accessibility. This may involve professional development training opportunities, dedicated support, or a blend of these two. What’s important is that you understand the resources that are available to you and that accessibility be integrated as a priority into the development of your course.



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## Notes

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<sup>1</sup> Hargadon, S. (2011, June). Open Learning: The Future of Education. [Keynote presentation]. Online Teaching Conference, Orange Coast College.

<sup>2</sup> Sowers, E. (2016, May 6). Student Engagement in Large Lecture Classes. Teaching and Learning Innovations at CI. [blog post]. <http://tlinnovations.cikeys.com/uncategorized/student-engagement-in-large-lecture-classes/>

<sup>3</sup> For a succinct checklist to assist with evaluating web-based content for 508 compliance, visit: [http://www.epa.gov/inter508/toolkit/508\\_compliance\\_toolkit\\_web\\_apps.htm](http://www.epa.gov/inter508/toolkit/508_compliance_toolkit_web_apps.htm) – checklist.

<sup>4</sup> University of Washington, Web Accessibility. <http://www.washington.edu/accessibility/web.html>.

<sup>5</sup> Brown, C. & Keegan, S. The Three C's of Accessibility and Distance Education, High Tech Training Center. [report]. Retrieved from [http://www.htctu.net/publications/articles/three\\_cs\\_111804.pdf](http://www.htctu.net/publications/articles/three_cs_111804.pdf).

<sup>6</sup> Ibid.

