

## THE ACCESSIBLE CAMPUS

From course materials and classroom technologies to enterprise systems and university websites, here is your starting point for building accessibility into every part of the student experience.

SPONSORED BY:



# Table of contents

**Accessibility in Digital Learning Increasingly Complex** ..... 3  
 While accessibility considerations cross multiple areas of both K-12 and higher education, institutions are still struggling to navigate issues of disability and access.

**Your Course Accessibility Checklist** ..... 4  
 Yes, it's possible to embed accessibility into the course creation process, without expending too much time or effort. Here are things to consider during each development phase.

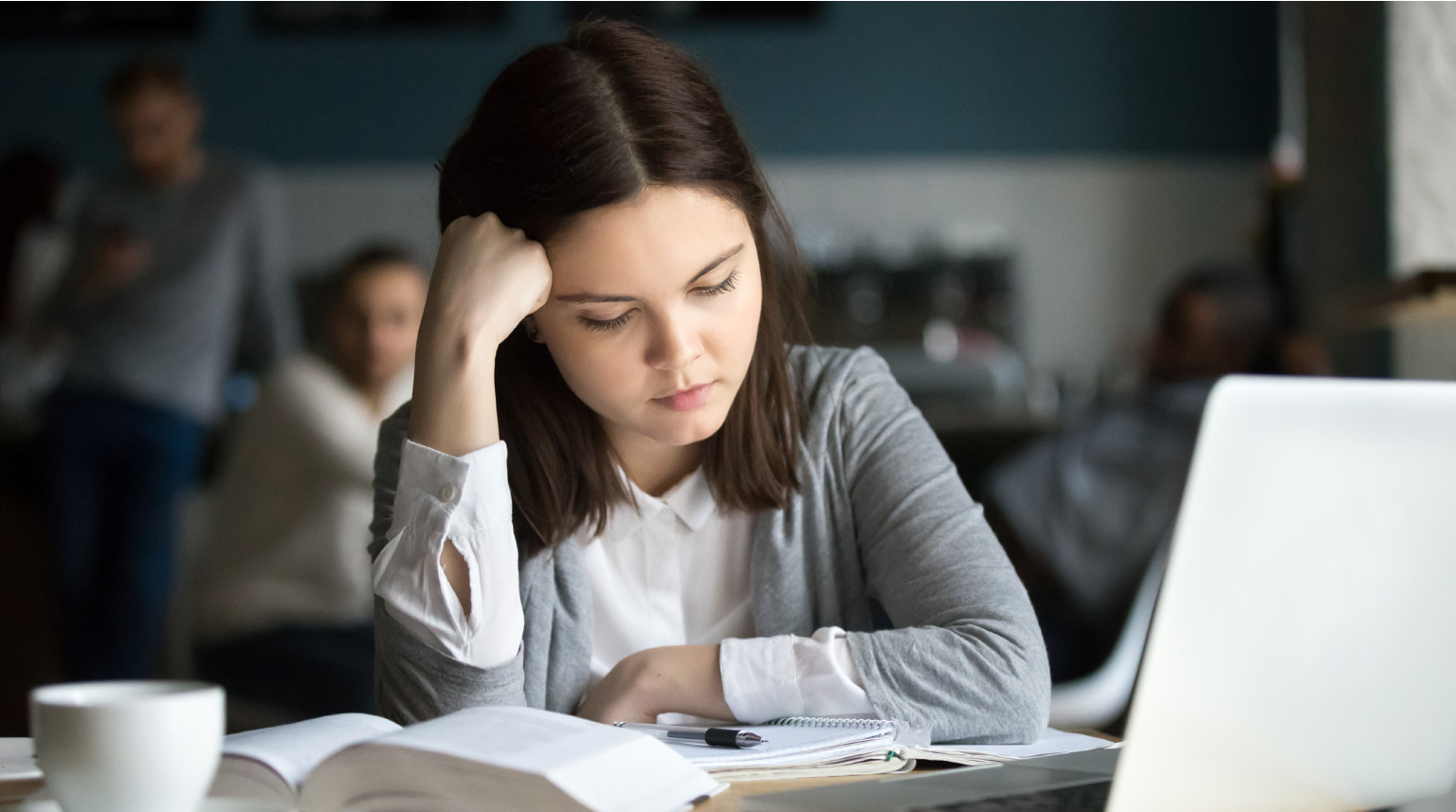
**Building University-Wide IT Accessibility** ..... 7  
 While many higher ed institutions focus mostly on web accessibility or rely on a disability resources center to serve students in need, Temple University has ramped up its accessibility efforts across the board. Here's how.

**5 Accessible Design Tips for Blended Courses** ..... 10  
 Revamping a course to be accessible to students with physical or learning disabilities can help make it more accessible to everybody else too.

COVER: RAWPIXEL.COM / SHUTTERSTOCK



IMASY POVOZNIUK / SHUTTERSTOCK



# Accessibility in Digital Learning Increasingly Complex

BY DIAN SCHAFFHAUSER

While accessibility considerations cross multiple areas of both K-12 and higher education, institutions are still struggling to navigate issues of disability and access.

**The complexities of accessibility are a major focus** in a series of reports from the Online Learning Consortium exploring the latest developments in digital learning. The initial report, covering accessibility in both K-12 and higher education, addresses four broad areas:

- The national laws governing disability and access and how they apply to online courses;
- What legal cases exist to guide online course design and delivery in various educational settings;
- The issues that emerge regarding online course access that might be unique to higher ed or to K-12, and which ones might be shared; and
- What support online course designers need to generate accessible courses for learners across the education life span (from K-12 to higher education).

“As our first OLC Outlook report explains, accessibility in K-12 and higher education is becoming an increasingly complex terrain to traverse as schools increase online materials and instructional delivery options,” said Jill Buban, senior director of research and innovation for OLC, in a prepared statement. “This report examines the critical terms, legal precedents, and other considerations for course designers, instructors, and administrators as they work to improve the educational experiences of learners with disabilities.”

As the report concluded, college and K-12 accessibility considerations come into play at multiple levels: institutional, department, program and course for higher ed; and federal, state, district, school and classroom for K-12. But at no level has there been a sufficient push for increasing accessibility to “stave off complaints, legal actions, and high attrition rates for students with disabilities.”



# Your Course Accessibility Checklist

BY DAVID RATHS

Yes, it's possible to embed accessibility into the course creation process, without expending too much time or effort. Here are things to consider during each development phase.

**“If you are teaching an online course,** the chances are you have a student with a disability,” according to Jason Khurdan, a manager in the Office of Disability Services at Rutgers University (NJ). Regardless of whether a university considers accessibility a priority now, he said, “eventually they will because it is becoming an issue that is more apparent in society as a whole.”

Khurdan spoke about accessibility issues at a recent Rutgers-hosted online learning conference in New Brunswick, NJ. He started his presentation by giving a live demonstration of the struggles a student would have using an NVDA (NonVisual Desktop Access) screen reader on a typical syllabus he found online. “Attendees saw how difficult it was to work through this document. Images weren’t tagged. It was difficult to find the accessibility statement,” said Khurdan. He noted that one survey of online distance learning web pages found that only 23

percent of pages were accessible.

Like other universities around the country, Rutgers has ramped up its efforts to make both online and traditional courses accessible. In an interview with *Campus Technology*, Khurdan described how faculty members can embed accessibility into their course creation process — without having to become experts or devote inordinate amounts of time to the effort. He breaks that process up into four distinct phases, each with a checklist of recommendations.

## 1) Research Phase

**Meet with campus experts.** Developing a course takes many groups of people and skill sets, pointed out Khurdan. He recommends that faculty members set up meetings with the following groups:

## Accessibility Resource

**The University of Washington** has developed an online IT accessibility checklist along with extensive how-tos: [washington.edu/accessibility/checklist](http://www.washington.edu/accessibility/checklist). As the site notes, many of the items in UW's checklist apply to web pages and web-based applications; electronic documents in Microsoft Word, Adobe PDF and other formats; and other products and services that are not specifically web-based.

- **Office of Disability Services:** The staffers here can provide you with great insights into how to make items more accessible. And thanks to their firsthand experience working with students and other instructors, they can help troubleshoot problems you may encounter.
- **IT/LMS management:** The folks who manage your learning management system know it inside and out, and chances are the problems you encounter are not unique. Working with them will help you better design your course for all students.
- **Libraries:** Libraries are essentially warehouses of information, and librarians have spent countless hours sifting through and collecting those pearls of wisdom.
- **Classroom Support:** Support personnel can help you understand what audio options are available, as well as WiFi. Students who use CART (communication access real-time translation) may rely on that connection to view the live stream on their laptops or mobile devices.

**Consider academic standards.** Khurdan said faculty members must ask themselves what the academic standards are for a course, because those will be used to determine whether an accessibility accommodation is considered reasonable. For example, the use of a calculator will clearly violate the standards of an Algebra I course where students are expected to memorize multiplication tables. This may not be true of a psychology course that requires students to apply appropriate statistical principles.

### 2) Development Phase

**Put together a required reading list.** For students who need their books in alternate format text, it's a good idea to publish your required reading lists as soon as possible. If you are posting things online, try to use accessible versions of text whenever possible.

**Include an accessibility statement in your syllabus.** An accessibility statement provides information on where students



with disabilities should go if they need assistance. Encourage students to speak with you in private about any accessibility challenges they may be facing. Keep the conversation focused on challenges they may be having accessing information.

**Are course documents accessible?** Font type, color and size can all have an impact on a document's accessibility.

- **Use readable fonts** such as Arial, Verdana and other sans serif fonts. Try to avoid ornate, cursive-type fonts that may be difficult for someone with a visual impairment to read.
- **Bigger is better.** As we get older we all have trouble reading, so avoid using small font sizes.
- **Stick to black on white.** Some individuals may have a disability that makes it difficult to see contrast. To check if your foreground and background colors are accessible, try passing them through a [color contrast checker](#) on the web.
- **Avoid using color on its own to represent meaning** or distinguish between items. When possible, combine color

with shapes or use written content to distinguish between items. For example, a line chart may have two series listed on it: one with round markers along it, and another with diamond markers along it.

- **Style guides can help.** The style guide function in Word is a simple way for faculty to incorporate accessibility into documents, suggested Khurdan. “Documents have structure. Start building structure into everything you do, so that people with visual impairment can follow along.”

### 3) Design Phase

**Pay attention to navigation.** Can a student with a disability navigate your course materials with the same ease that other students can? A variety of tactics can help improve accessibility:

- Use consistent navigation on all of your pages;
- Make navigation items easy to understand;
- Make sure that course materials can be navigated with a screen reader and with the use of the keyboard or other assistive technology;
- Avoid iframes, as screen readers have a difficult time processing them; and
- If you are a developer, use ARIA landmarks to clearly define navigation sections.

**Ask the host of your LMS:**

- Can students access and navigate my site easily with a screen reader? Have you tested it with a screen reader?
- For students who need to use CART services, is there a module available to plug captions into the course?

**Include captions.** If you use video, take steps to have the video captioned or provide a transcription of the video if applicable. If you are posting audio, include a transcription file along with it.

### 4) Implementation Phase

**Communicate up front with students.** On Day 1, as you go over the syllabus, let students know that if they have or believe they have a disability and need assistance, they should speak with their Disability Services office.

**Remember exams.** Work with your IT department and LMS management team to ensure that any exam is accessible with a screen reader. If a student presents you with a letter for extended time, you should also work with him or her to help you determine how to make those arrangements online. If faculty members approach the Office of Disability Services about these issues during the research phase, Khurdan noted, they can head off problems before they come up. “If you let us know the day of the exam, it doesn’t do us a whole lot of good.”

---

**David Raths** is a Philadelphia-based freelance writer focused on information technology.

## Accessibility Auditing

At [George Mason University](#) (VA), an effort to streamline the development of new distance education courses has accentuated the importance of integrating accessibility into course design — and making sure accessibility can be audited across the whole university.

According to Kara Zirkle, who worked as IT accessibility coordinator at the university for nearly a decade, new distance education courses at George Mason used to go through a yearlong “4P” process (proposal, production, pilot and portfolio) that included an accessibility section. But the lengthy process was holding back course development. “We just weren’t able to push out as many courses as we would have liked to from Distance Education’s perspective,” she said.

So instructional designers moved to a program called the Online Course Development Institute (OCDI) that shrinks the process down from a year to only six weeks. Faculty members focus on creating just one module rather than their whole course. Accessibility issues take up one of the six weeks. Faculty members have to take one of the documents they created and make it accessible, as well as add captions to their videos.

“We have a checklist we use as an audit document,” Zirkle explained. Items on the list include: Do you have the most up-to-date disability statement in the syllabus? Do you have the accessible document structures and tables? If you are providing links in the course, do you also provide a PDF version of that link? In addition, Zirkle said, “The OCDI process introduces faculty members to our office and its services. We provide free captioning and free document conversion.”

Once the course material goes through an audit, if the issues are minor, some faculty members address them themselves while others require more help or ask to learn how to make changes on a regular basis. “One of the biggest issues we saw in early reviews involved videos not being captioned,” Zirkle said. “Well, we offer that as a free service, so that is an easy fix.” Another common issue involves the supplemental applications offered by textbook companies, she added.

Since September 2015, George Mason has made the course audit process available to the whole university (not just distance education) through its [Assistive Technology Initiative](#). Still, Zirkle said, distance education courses are usually the most difficult to figure out how to make accessible. “If you can figure out how to make that online course accessible, that trickles down to all other courses,” she said.



# Building University-Wide IT Accessibility

BY DAVID RATHS

While many higher ed institutions focus mostly on web accessibility or rely on a disability resources center to serve students in need, Temple University has ramped up its accessibility efforts across the board. Here's how.

**Tim O'Rourke is the first to admit that in 2011, Temple University's (PA) IT organization didn't give technology accessibility enough consideration.** His 30-year tenure at the institution — including 13 years as VP for Computer Services and CIO — has given him an intimate understanding of the institutional mindset: “Our whole philosophy at the time was that if we have a disabled student, we have a really good disability resources center. Students can go there and they will handle it. That was our thought process,” he said.

But within four years, Philadelphia-based Temple developed a university-wide Accessible Technology Initiative, with liaison positions in each college and department responsible for monitoring and reporting on web and instructional-material accessibility. So how did Temple launch such a comprehensive initiative and maintain momentum?

## Broadening the Scope

O'Rourke recalled that Sheri Stahler, associate vice president for client services and computer labs, had worked to convince him

that accessibility was about to become a much bigger issue. Then in 2011, Pennsylvania State University and the National Federation of the Blind announced a major settlement agreement of a U.S. Department of Education, Office for Civil Rights complaint.

The PSU settlement did two things: “It told us that our philosophy of just sending people to the disability resources center was not enough,” O'Rourke said. “It also gave us some guidelines on what to do, because we really didn't know what to do. The first thing we realized was that we had to do a complete audit.”

O'Rourke realized launching a university-wide initiative would be difficult. “We are dealing with systems ranging from e-mail, Blackboard and classroom technologies to administrative and parking systems, and every system is different. What kind of program do you put in place to make it happen?”

Although he didn't have a budget to assign to the project, O'Rourke put Paul Paire, executive director of special projects at the time, in charge of the accessibility initiative in early 2012. The external auditor's report told Paire that Temple was on par with other institutions that hadn't really addressed this issue,

and the university needed to address gaps in learning spaces, labs, instructional materials and the web. Some institutions focus mainly on web accessibility, Paire noted. “But when we looked at what happened at Penn State, it was obvious we couldn’t just focus on the web. We needed to address the institution as a whole. We needed a much broader scope.”

### A Team Effort

Paire spoke to IT accessibility leaders at PSU and California State University about how to proceed. “They suggested team structures, work groups to create and who to include on teams, and the consultant who performed the audit also made suggestions,” he said. O’Rourke reached out to faculty representatives and deans, the legal team, the provost, human resources and library executives, to find people willing to participate.

Work groups were created to help identify or create standards around procurement, instructional materials, websites and learning spaces. In some areas, standards already exist, Paire said, while in others there are not clear guidelines. For instructional materials, they looked at resources created at places such as Cal State and Stanford (CA).

“We looked at things such as accessible syllabus templates, and asked whether they make sense for us or are more rigorous than what can be done by faculty without significant assistance,” he explained. “We really want faculty to be able to do this as part of their normal processes. We took lengthy documents and boiled them down to checklists, and then developed training seminars for how to make a syllabus accessible or how to make a PowerPoint accessible.” Besides checklists, faculty members get a clear rationale for the process. “Then they tend not to see it as just arbitrary rules, because they get an explanation for why this is necessary,” he said.

The purchasing department came on board quickly. Any

**11% of students with disabilities say their** university is not even aware of their accessible technology needs.

*Source: “Study of Undergraduate Students and Information Technology” from the Educause Center for Analysis & Research*

piece of software or hardware purchased is checked for accessibility. “We ask the vendor for the VPAT [Voluntary Product Accessibility Template],” Paire said. “If it is not compliant, we ask people doing the purchasing to look at other products. In some niche areas — in science, for instance — there are no fully accessible products, so we created an exception process to handle that,” Paire said.

An Accessible Technology Compliance Committee is tasked with effecting change and is responsible for setting standards, enforcement and granting exceptions.

### Accessibility Liaisons

One early idea that came from an instructional materials work group was the creation of liaison positions in each college. “There is so much that we needed to address in the schools and colleges — computer labs, learning spaces, websites — every one of those aspects is handled by each college,” Paire said. Without liaisons, central IT would have to do road shows and presentations to every single faculty member, he said. Creating liaison positions was seen as a way to get continuity and estab-





### A survey of the higher education

community ranked accessibility and universal design for learning among the top 5 teaching and learning issues for 2019 – above learning analytics, competency-based education and instructional innovation.

Source: “Key Issues in Teaching and Learning” survey from the Educause Learning Initiative

lish priorities. Every year the liaison for each college must write a progress report on accessibility and create a plan for making improvements.

“College deans appoint the liaisons based on knowledge, interest and ability to make it happen,” said Barbara Dolhansky, who served as associate vice president for computer services at the time. “They must be respected within the college and have some level of authority and be committed to it.”

Aaron Spector, director of disability resources and services and co-chair of the compliance committee, said the liaison positions are important because communication is key with this type of wide-ranging initiative. “There are policy statements and guidelines, but the ultimate goal is to change the culture at the university. So you need structures and channels for communication,” he said, adding that the liaisons allow the compliance committee and working groups to get their work out to key people in each school and college.

### Monitoring Compliance

O’Rourke noted that setting reasonable deadlines for compliance is important. “This is not going to happen overnight or even in a year,” he said, “but we needed to put a plan together and attack things as we can, and we have done that.”

Liaisons’ annual reports touch on four areas: computer labs, course materials, learning spaces and websites. “We ask them to tell us how we communicated what the requirements are; how well they communicated that out to their college; and their progress,” Paire said. Every school and college has made progress. There are resources issues, so some colleges are further along than others, he added. Some have launched brand-new websites, so they could bake accessibility in from the ground up. Others had to remediate theirs, which involved much larger projects.

As the deadline for website accessibility approached, a letter went out to all schools asking for updates on progress and a plan to reach compliance for those not yet at 100 percent. The letter said that if a plan was not submitted, the university might be forced to shut down the unit’s website. “Rather than taking

## 4 Tips for University-Wide Accessibility

Temple University’s university-wide accessibility initiative is challenging but important work. Here are four best practices for getting there.

### 1) Read the Penn State University settlement agreement

with the National Federation of the Blind. “It provides a guideline for where they need to be and describes the scope of the problem,” explained Tim O’Rourke. Also, make sure someone in the legal counsel’s office is involved, he added. Legal counsel for Temple worked to get up to speed with all relevant laws and has been instrumental to the process.

### 2) Recognize that accessibility is an ongoing process.

“It is not something you can solve and then walk away from,” said O’Rourke. “It is ongoing, because the technology is constantly changing, so you have to keep the awareness alive.”

**3) Begin with an audit** to help set priorities; make improvements; and then evaluate again, recommended O’Rourke. Focus on communication capabilities: IT and disability services must figure out how to spread the message that accessibility is a shared responsibility, he added. They must promote resources and tools everyone can use to create IT access. “People want to do the right thing, but they have to be shown how.”

**4) Find a champion.** According to Paul Paire, the greatest success factor at Temple was having the CIO be a strong leader on the effort. “If you want to launch an initiative on campus,” he said, “get a leader who will back you up, lead by example and talk to peers, the deans of schools and colleges, to garner support.”

any website down right away, we are trying to work with them,” Dolhansky said. “We will sit down with them and go over where they are not compliant and help them. That is our first step.”

So why are universities with strong IT accessibility programs still the exception rather than the rule? “I think like at Temple previously, many universities view accessibility as the responsibility of a small disability resources unit,” Spector said, “and that unit is usually not positioned to have a wide enough reach or authority to move large masses of people at the university. It is only when the CIO or a vice president takes ownership of this important compliance initiative that it can really move.”

*David Raths is a Philadelphia-based freelance writer focused on information technology.*



# 5 Accessible Design Tips for Blended Courses

BY DIAN SCHAFFHAUSER

Revamping a course to be accessible to students with physical or learning disabilities can help make it more accessible to everybody else too.

**Blended learning** typically involves an element of student control over when, where and how learning takes place. But what happens if a student isn't very good with "self-direction, self-pacing and self-motivation"?

As Ibrahim Dahlstrom-Hakki, a researcher and associate professor at [Landmark College](#) in Vermont, expressed it, those are "critical areas of weakness" for students with learning disabilities — and they can be problems for mainstream students as well.

Landmark provides college-level studies for students with learning challenges such as dyslexia, attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). Research there has found that when blended courses address the needs of students who learn differently, average students benefit as well. Dahlstrom-Hakki and his colleague Manju

Banerjee shared what they've learned from their students during a presentation delivered at a recent [Online Learning Consortium](#) conference.

Here are five techniques for making sure blended courses work for everybody.

## 1) Plan for Accessibility, Don't Retrofit

Often, new courses (as well as the technologies used in them) are designed with mainstream students in mind, with the intention of going back to "retrofit" for accessibility. "That generally works out very, very poorly for the students who are not in that center group," Dahlstrom-Hakki insisted. What you end up with is curriculum that seems to have accommodations "slapped on" rather than integrated.

A simple example is this: Imagine that you create PDFs

## Building Accessible Online Content

To help its faculty build ADA compliance into courses from the start, Western Kentucky University has developed a series of short videos that lay out the basics. Here are three practical tips from the institution worth remembering when building your online course materials.

**Add alternative text to your online images.** This is text that shows up when a mouse hovers over an image or that a screen reader will pick up when running down the page. Use the ALT tag for a short text description; use LONGDESC for complex images that require more detail in the description. If you're using Microsoft Word, PowerPoint or Excel, the instructions for doing so are pretty much the same: Right click on the image, select Format Picture, and choose the ALT text option from the bottom of the list. You'll get a text window. Open that and type an appropriate

description, using the Title text field for your ALT text or the Description field for your LONGDESC text.

**Develop accessible online assessments.** As WKU's video about this topic explains, "Questions that require viewing an image are not accessible to a student with a visual impairment. Questions including an audio file would not be accessible to a student with a hearing impairment. For a student with a learning disability, questions with strict time limits and a distracting environment can be overwhelming and therefore inaccessible." The university's advice: Provide a written transcript for audio-based questions or, "if practical," avoid audio altogether. Extend time limits for assessments when the student has a letter of accommodation from your office of student disability services. And consider offering a less distracting testing envi-

ronment to students who need that.

**Be thoughtful about your online content.** Use 12 point or larger font sizes for your text and a consistent style; Times and Helvetica tend to offer optimal readability. Likewise, watch your color use. The combination of red and green is the worst; a light colored background and dark font color will deliver "maximum visual impact." When setting up hyperlinks, use "self-describing" and "meaningful" title tags. For example, instead of "http://www.wku.edu," use "Western Kentucky University's website." Where that's not possible, try to include a hyperlink screentip that can be picked up by screen readers. In Word, for example, right click the hyperlink, select Edit Hyperlink, and choose ScreenTip button in the upper-right corner of the box. Type the text and click OK there and on the Edit Hyperlink box.

of articles or presentations and post them in the university's learning management system. If those PDFs consist of images of scanned pages, screen readers used by people with visual disabilities won't be able to process them. If you're aware of that from the beginning, you'll know to go into the program you use to create the original document (such as Microsoft Word or PowerPoint) and generate the PDF directly from there.

Or if you're including access to online videos, they need to be produced with the intention of including captioning or transcripts for students with hearing impairments. If you wait until captioning is requested, the student may already be behind in his or her work by the time the request is fulfilled.

### 2) Don't Assume Internet Savvy

For blended courses, internet navigation needs to be explicitly taught for many students with learning challenges, reported Banerjee. The problem, she said, is that the web has no starting page and no ending page; going into it is like entering a rabbit hole.

In face-to-face classes, students are assigned a chapter or an

#### Just half of students with disabilities

give their university a positive rating for its awareness of accessible technology needs.

Source: "Study of Undergraduate Students and Information Technology" from the Educause Center for Analysis & Research





article to read. “You know its beginning and end,” she pointed out. But on the internet, the boundaries are very hard to define. “You have to know how to carefully formulate search words/phrases. You have to know which links might be authentic and which are just someone’s opinion.” And most importantly, she added, “You have to know when to stop.”

Although faculty often see themselves as content experts rather than experts in providing these types of supports, consider how you can provide guidance to students about their online practices.

### 3) Build for Cognitive Access

Whereas physical access uses instructional techniques and tools to help the student focus on learning instead of the physical demands of the learning process, cognitive access puts an emphasis on creating approaches and elements that help learners to gain, remember and work with information within a digital learning environment.

Often, students have “executive function” challenges that get in the way of success. As Banerjee explained, an executive function is a “meta-awareness of the learning process” — the ability to set and pursue a goal. Many of the students at Landmark “take ‘detours’ in achieving their learning goals,” added Dahlstrom-Hakki. “Sometimes their detours are detrimental to the learning process.”

“Scaffolds” can be used to provide the cognitive access these students need — for example, simply listing the number of pages in a reading on the syllabus, or adding an abstract of what needs to be read. For students who are bad with time management, a page count will tell them if they have sufficient time to do the reading. If a student has 10 minutes and the reading is nine pages long, he or she is probably not going to be able to finish it at that time, Banerjee offered.

Another kind of scaffold is a simple Excel template that students can use to make sure they’re clear on grading guidelines and course participation, as well as to chart their progress. The “Grade Tracker” was created through a research project that Banerjee was involved in to develop a “resource toolbox” that helps instructors build scaffolding into their learning environments.

### “Accessibility in K-12 and higher education

is becoming an increasingly complex terrain to traverse as schools increase online materials and instructional delivery options.”

— Jill Buban, senior director of research and innovation, Online Learning Consortium

### 4) Rethink Content for Engagement

Because students with learning disabilities already struggle to maintain focus, “If the content isn’t very engaging and isn’t very motivating, then you have virtually no chance of bringing them in and moving them through the material,” warned Dahlstrom-Hakki.

For instance, a math class that follows the traditional approach of teaching the basic concepts — equations and symbols — before getting to problem-solving may present a barrier. “If you have a student who can’t engage at that basic level, they’re never going to get to the stage [of] applied work and interesting problems,” he noted. Better to get students immersed into problem-solving and then back into the concepts.

### 5) Make Students Feel Like You’re There

Students need to feel a part of a social interaction, Dahlstrom-Hakki said. “They need to feel that they’re in an online environment where the other participants are real; the professor is real. It can’t be purely academic.”

It’s easier to achieve that sense of immediacy and intimacy in synchronous interactions, he added, which are standard practice when working with students with learning disabilities. The question is whether those elements can also be achieved in asynchronous activities. It’s a topic he and Banerjee are interested in exploring, since “there’s virtually no research in this area,” he said.

The researchers have gleaned a couple good suggestions from student comments about their online courses: First, it’s important to provide timely response to student questions in chats, forums and e-mail. As one student complained, the blended approach can make it more difficult to communicate with professors: “A lot of them travel also because a lot of them aren’t real professors, well, they don’t work here ... This guy I’ve got to e-mail and wait for him to respond and sometimes it can be awhile.”

Second, find ways to encourage students to jump in and help each other. As another student stated, an advantage of a blended course is that “you can chat with kids in your class so if you have a problem and your teacher can’t get back to you, you can post a chat and the kids can respond to you and answer your question if they have any insight.”

*Dian Schaffhauser is a senior contributing editor for Campus Technology.*