**Workforce 3One**

**Transcript of Webinar**

**Universal Design for Learning and Web Content Accessibility (WCAG 2.0)**

**Meeting your TAACCCT Requirements**

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ERIC BELLINO: OK. I'm going to transform it into the presentation mode. This is where we'll get kicked off here, and I'll introduce Aparna and she'll go through today's presenters. Aparna.

APARNA DARISIPUDI: Thank you, Eric. Hello, everyone. My name is Aparna Darisipudi. I'm with the U.S. Department of Labor. I work with the TAACCCT team on Skills Common as the new federal project officer. I'll be introducing our guests today, but before I do that I'm going to ask Jennifer Freeman, our TAACCCT technical assistant lead for Jobs for the Future, to briefly describe the TA team and how today's webinar fits into the bigger picture of what we do in TA. Jennifer?

JENNIFER FREEMAN: Great. Hi, everyone, and thanks, Aparna. So I'm with Jobs for the Future, and we manage the TAACCCT Learning Network for the Department of Labor. And we coordinate that with a variety of other organizations and provide a host of technical assistance opportunities for you, including coordinating this webinar, which we've done with folks from CAST, who will introduce themselves in just a minute. So, Aparna, back to you.

MS. DARISIPUDI: Thanks, Jennifer, for that quick overview. Today's webinar – and a description was quite wordy, but the bottom line is today you're going to hear about Universal Design for Learning and the Web Content Accessibility Guidelines as required by the TAACCCT grant.

The two speakers are Christina Bosch and Sam Johnston. Christina joined the CAST staff in 2013 as the instructional designer and has been working on the open project for TAACCCT grantees for some time now. Sam Johnston is a research scientist at CAST, and she's also the project director of CAST for Open Professional Network. I'm going to hand it over to Christina to start the presentation. Christina?

CHRISTINA BOSCH: Thanks, Aparna. Hi, everyone. So a quick the introduction about CAST and who we are. We're an education research and development non-profit that works to expand learning opportunities for all individuals through Universal Design for Learning, which we'll be getting into a little bit later today.

I wanted to just also mention at this point that this recording will be available after this afternoon, and it would be great to share it with instructional designers and any other faculty or staff that might not have been able to make it today. We will also be doing an additional webinar that would be great for various roles in late September or early October based on our website, UDL On Campus. So keep your eyes and ears open for notice of that.

So just to give a quick overview of what we're going to be covering today, we're hoping to define accessibility in the context of Universal Design for Learning, which we'll often refer to as just UDL. We are going to provide an overview of Universal Design for Learning based on your responses to a couple polling questions that are going to come up right after this slide.

So we're trying to tailor it to participants' level of knowledge. We're going to also show examples of UDL and accessibility best practices in postsecondary and finally do a little bit of a tour of our UDL On Campus website and share resources on web accessibility that's going to be relevant for grantees and OERs.

So to start off, it would be great to get some feedback from those of you out there listening in today on how familiar you are with Universal Design for Learning. So go ahead and let us know if you're very familiar, you use it all the time, somewhat familiar – maybe you've just heard of it and you kind of try to dabble in it or use it sometimes – not too familiar – maybe you've heard of it but you don't really employ it at all – and maybe you are not familiar at all and this is your first time hearing about it. So letting us know that will help us inform how much time we spend on our overview.

So it looks like we're getting a really great response rate. Thank you. We have the majority of people in the not too familiar category, and then it looks like the sort of second most popular answer is somewhat familiar. And then we have a few newbies in the group. Thanks so much for attending today to sort of expand your knowledge. And then a couple expert, and we'll be definitely throwing some new information your way.

So let's move on to this next slide then. How familiar are you with accessibility guidelines like in particular the Web Content Accessibility Guidelines or WCAG 2.0? Let's see how this lines up with our previous slide. So very familiar again is an option, somewhat familiar, not too familiar, or not at all familiar.

Great. So it's looking like this time we have more people in the not at all familiar category, and maybe that's getting tied with the not too familiar and then a nice sort of handful of somewhat familiar and very familiar. All right. So it's great that you've tuned in today because this is going to be what we really go over then.

So the relevance here is that the solicitation for grant applications for TAACCCT requires the incorporation of the Universal Design for Learning framework as a way to ensure accessibility of learning materials that are created under TAACCCT in compliance with the Americans with Disabilities Act and the Rehabilitation Act as well as the Web Content Accessibility Guidelines, which we'll often be referring to as just WCAG, W-C-A-G 2.0. So right here we're just looking at a snippet from the SGA about meeting your requirements.

And to be sure that we're operating on a similar definition of accessibility, here's one that comes from the Office of Civil Rights Compliance. So accessible means a person with a disability is afforded the opportunity to acquire the same information, engage in the same interactions, and enjoy the same services as a person without a disability in an equally effective and equally integrated manner, with substantially equivalent ease of use. We'll be breaking that down as we go along.

This slide is a nice kind of visual of what that means. So here we're looking at two images. On the left we have a building at the University of Saskatchewan that has ramps where you might normally have had stairs, and these are clearly built into the original architectural design of the building.

On the right we have an image called Ramp and Can, and this shows you what you'll often find in terms of wheelchair accessibility in buildings where that's been added on as an afterthought. So we like to show this slide and sort of remind you that the UDL approach stands in stark contrast to the typical approach for designing teaching and learning in postsecondary education.

With UDL accessibility built in from the beginning and not added on, we often however will encounter in postsecondary environments that use the idea of a mythical average learner as the basis for creating maybe a one-size-fits-all curriculum.

And in this kind of a case, attempts to address education barriers for students at the margins, such as some of those served by TAACCCT and some of those who have disabilities, oftentimes approaches like that take a remediation sort of perspective that emphasizes how individuals can overcome the ways in which they're different.

But when you remediate or retrofit, you're often taking an approach now I guess to the image on the right, and in contrast UDL passes an approach more like what we see with the ramp built in from the beginning. We believe that the most effective innovations actually come when efforts are made to meet the needs of the most marginalized students from the beginning. We believe that innovations that are essential to some end up being beneficial to many, and that's kind of what we're going to be going over today and providing examples of.

So how do you do that? How do you have that elegant approach to integrating accessibility and options for all the diversity of learners that you're going to encounter from the beginning? Well, UDL has taken an approach that's rooted in the three major learning networks that occur in the brain. So we have the recognition network, which we often refer to as the what of learning, and that is seen on the left in this slide.

We have the strategic network that's often referred to as the how of learning, how we act on the information that we're able to perceive. And then we also have the affective network in the brain as the third major system of neural regions that play in learning. That gets at the why of learning or how we engage with material.

So UDL sort of takes these three learning networks and says, all right. The way to design for all the variability and diversity in learners that we know we're going to encounter in any given environment is to make sure that we address each of these by presenting information and content in different ways, differentiating the ways that students can express what they know, and stimulating interest and motivation for learning.

So those are the three principles that form the basis of the Universal Design for Learning guidelines. And we're not going to really go through these right now, but especially if you're new to UDL or you've just heard of it, we want you to know that these are here and they are a tool for curriculum developers, faculty members, educational policy makers even, and others that are charged with designing learning environments.

So the framework has the principle of multiple means of representation, multiple means of action and expression, and multiple means of engagement. Within each of those you see that there are three guidelines, and within each of those major guidelines there's even more concrete checkpoints that helps ensure basic accessibility and beyond that helps ensure that we're addressing barriers that can arise for all learners in ways that help students make information meaningful.

Finally at sort of the deepest level of removing barriers to learning for all students, we're able to make sure that we're designing environments that support independent self-directed learners. And that's really what the framework is about.

So we want to make sure to also cover for you, as was mentioned in the SGA, some of the legal obligations that are around ensuring accessibility in learning environments. So we have Section 504 of the Rehabilitation Act. This prohibits discrimination on the basis of disability in programs and activities that receive federal funding.

And then the other key disability-related civil rights law is the Americans with Disabilities Act, and there's two titles in here that are relevant for us. Title II prohibits discrimination on the basis of disability in all public entities, including public colleges and universities, regardless of whether they receive federal funding. And then Title III prohibits discrimination on the basis of disability in places of public accommodation, including private postsecondary institutions. So together these really end up affecting everyone.

There is a detail here about what students are protected. In order to be protected under Section 504, technically speaking, students must be considered qualified. That is they must be able to meet all academic and/or technical standards for admission or participation in the educational program or activity.

And then in addition they must also have a disability, which is further defined as having a physical or mental impairment that substantially limits one or more major life activities, as having a record of such an impairment, or as being regarded as having such an impairment. And major life activities include seeing, hearing, learning, reading, concentrating, and thinking.

In relation to that we now have the Web Content Accessibility Guidelines or WCAG 2.0 because accommodations in places in public spaces is increasingly applicable to the internet or learning environments that are online.

So postsecondary institutions can find guidelines for web accessibility in these Web Content Accessibility Guidelines, which have been developed by the Web Accessibility Initiative of the World Wide Web Consortium, often referred to as W3C. These voluntary international guidelines consist of 12 broad guidelines categorized under four principles of accessibility, which you see here.

So the first is that information must be perceivable. And what that really means is that we provide text alternatives for any non-text content and that makes it easier for users to see and hear content, including separating foreground from background, for example. The other main principle of accessibility is that information is operable. So we want to use interface components and navigation in ways that make all functionality available via keyboard.

We may also provide ways to help users navigate, find content, and determine where they are within content. The third principle is that information is understandable. So the interface must be operable and understandable, and what this really means is text content should be, for example, readable. Webpages must be able to appear and operate in predictable ways for all users.

A fourth principle of these guidelines is that they be robust. So content is robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

And this is often challenging because there's really a range of AT or assistive technology out there, and it's hard to sometimes predict how it's going to interact with online information. But the idea here is to really make things operable and maximize their compatibility with current and future users. UDL On Campus, our website, has a whole page on this, if you're interested. This is a live link that will be accessible in the download of the PowerPoint.

So we want to just kind of close this section and we're about to get to a polling question with a real-world example of why this is all really relevant to us right now. So many of you may have heard of the settlement agreement between the U.S. Department of Justice and EDX, which is an online learning platform that Harvard cofounded with MIT in 2012.

Recently these parties entered into a settlement to address violations of the Americans with Disabilities Act. The National Association of the Deaf sued Harvard and MIT for discriminating against the deaf and hard of hearing by not providing online captioning both for the courses they offer through EDX and the rest of their online content, which is a lot.

So as part of the settlement EDX and all its mobile applications, including its learning management system, have to conform with WCAG 2.0 AA, ensure total compatibility with any accessibility features in course content. They have to hire an accessibility consultant and conduct annual accessibility audits and develop guidance and training for content providers.

What's so interesting about this agreement is that they're looking at both the technology and the content and addressing the issue of who's in charge. Is it the people who create the platform that are responsible for ensuring accessibility? Is it the people who create the courses? And the settlement really says both.

Ensuring accessibility is critical because it makes sure that people can perceive information and make it meaningful, and it sets the stage for option for comprehension. But this is where we need to start with a richer means of teaching and learning and have better methods so that students can comprehend what they're learning in all contexts, including online ones, demonstrate their learning in richer ways, and be engaged more fully in learning in general.

So we want to kind of pause here with a polling question and maybe get a sense from you all of what technologies in your environment are accessible or WCAG 2.0 compliant. And if you don't have a solid sense of which, that's fine too, but if you know, for example, that your webcast and web conferencing software is compliant, let us know. Maybe you know that hardware and digital tools. For example, polling devices or interactive projection boards that you use are accessible. Let us know that.

Maybe you know that your learning management system is accessible or you know of specific apps that you use or other. And as I mentioned, if you're here for the first time kind of learning about this, that's great for us to all sort of share with each other too. This information can sometimes be hard to get or it's difficult to know who's responsible for getting it. So sharing this is just kind of a great way to assess where we all are and take the temperature of the knowledge in this webinar.

So it looks like most people are saying that their learning management systems are the accessible sort of features in their environment. And that doesn't really surprise me. Learning management systems kind of have to be really up front about that and increasingly so. So that's interesting to see.

All right. We're going to move on, and I'm going to pass it over to Sam. So that –

SAM JOHNSTON: That part was more focused on sort of what are the kind of accessibility legal obligations and requirements. And we have a more comprehensive resource on our UDL On Campus site that's on your legal obligations, which you're welcome to go and read. We pulled from there, but that's got information about some other settlements. And the EDX settlement is actually not in there yet but some earlier ones, and we have other resources there on things like understanding what a voluntary product accessibility template is, which all of your learning management systems should have these.

They're basically publicly available from a vendor's website, information about accessibility, how they can form to accessibility standards. So when you're talking to your technology procurement people, if you're faculty members, want to use the technology in your class, you should be looking for this document called the VPAT. And you'll see in our UDL On Campus site that there's information about what a VPAT is, how you'd go about looking for those, some examples of different technology companies and what VPATs they have.

So there is a lot coming at you in terms of accessibility and pivoting to UDL. I know it's a lot of additional information but know that this is just meant to kind of get you oriented but there are an awful lot of resources.

Some we've made available on our site but an awful lot on WCAG 2.0 out there that you can access yourself to try and get more familiar with it and really understand what your legal obligations are so that you're not in a position where you're having to enter a settlement with the Department of Justice and retrofit a lot of existing material you – the real goal is to be thinking about accessibility as foundational from the start so that you're not having to retrofit later because that can be very costly and very time consuming.

So when we think about accessibility, we really think about that as foundational for Universal Design for Learning. It really is critical to be able to then move beyond just thinking about access to information to really what Universal Design for Learning focuses on, which is really access to learning and ensuring access to kind of high quality learning and that learners themselves are able to function effectively in different learning environments as their learning gets increasingly challenging.

And so that's where UDL originated 25, 30 years ago with CAST working more in the special education realm and migrated over towards general education because the reality is that many learners were not identified as having physical, sensory, or learning disabilities still may also struggle to learn due to (diversabilities ?) and backgrounds, cultural and linguistic backgrounds, other factors that affect perception, executive functioning, and engagement in environments and also in different context.

So if I'd been out of school for 10 years and I'm coming back to learning math, I may struggle even though I don't have a disability. And so we need to plan for supports and scaffolds and options for how to get oriented in the learning environment from the start. Even learners who are considered gifted may not have their learning needs met due to poor design of curriculum.

And so Universal Design for Learning was integrated into the Higher Education Opportunity Act of 2008 to set a higher standard for how we design instruction. And it basically called for instructional environments that include materials, teaching methods, and assessments based on Universal Design for Learning.

So you've seen it in the TAACCCT SGA, but you'll probably also see it in other SGAs that come up in other areas because it's really considered effective best practices, evidence-based practice for designing for all students from the outset. And that has implications for how we help students persist through to course and degree completion.

So when we think of sort of first principle of multiple means of representation and breaking that down a little bit, there's some kind of key elements. And those are really thinking about first kind of multimodal representations of material via text, images, symbols, and audio, so making sure that you're not presenting your content in just way. Certainly there are going to be some people who benefit from a print or text only representation of information, but if that's all you do, you're going to have other people who don't learn effectively in that way being at a serious disadvantage.

So what you want to do is always make sure that you have alternatives. So if you're using text, what's your alternative way of presenting that information so that someone for whom text is not an ideal medium, they can access it another way. So having something like text to speech where that text can be turned into audio is really critical for some learners, for example, those with print-based disabilities such as dyslexia.

You want to create options for perception, so making sure that if you have videos, that those are well captioned and transcribed. And actually doing both of those things, captioning and transcribing, are important, making sure that that information you're trying to convey through video is available to people who need a captioned version of that information because they can't process that information in an auditory way.

And then understanding the prior knowledge really influences one's interaction with content. So doing things like making glossary terms available is really critical. Giving individual learners opportunities to go in and get some background knowledge on a subject prior to entering the main component of a course or prior to being tested on something, and knowing that with multiple means of representation, because we're not so focused on access to information, that meaning making is critical.

So giving options around how students comprehend information and make sense of information and tie it to learning goals, to workforce goals is really critical. And that's really the focus of providing multiple means of representation is that we can get to a place where people have the capacity to comprehend information and turn that into meaningful learning.

So here's just an example from work we did with a round one TAACCCT grantee, National STEM Consortium. This is the open learning initiative platform, and what you see here is this idea of alternative access to content. So you have visual representation. This is a test question, what type of graph do you see? Where is the pie graph? Where is the bar graph? Where is the line graph?

And what you have is the capacity to click on and create what's called a long description, which is a written description of the same information that's available visually so that if I'm someone who doesn't process visual information well, which I don't happen to be someone who does, I have that written description so that I can get the same information. Now, that description's not telling me the answer. It's not saying this is a bar graph because that's what I'm supposed to be able to answer in this multiple choice question, but it's giving me information like this graph has – on the X-axis you will see this.

On the Y-axis you will see this, so that if I'm not processing that information visually, again with accessibility law, I have the same equal opportunity to access that information in a different manner. And the nice thing about these well-designed online systems is I can click that and make it disappear or I can have it appear. So I have that alternative representation of information easily accessible, but I can also just look at the visual representation if I want as well.

So just quickly knowing that you can do this in basic mainstream technology, here it is in Microsoft Word. If what you do, you can just go into format picture when you have an image, and you can get a text equivalent of images that conveys the purpose of the image based on the content. So you go into format picture. You go down to alt text at the bottom. At the top the alt text is just your title, and then you basically can put in also a long description, which you need to do when the image has information that's very critical to understanding what you're going to do.

So an example you just saw with the graph, I need to know information about the bar graph, line graph, and bar and pie chart so that I can answer the question. In that case you use a long description to give you the same quality of information that you would gather visually. And all Microsoft products have affordances built in like this one for creating alt text and long descriptions. They have affordances built in around accessibility. So it's important to get familiar with what the accessibility features are in these mainstream technologies that faculty are using to deliver lectures or whatever it might be.

So here's another area in sort of this representation realm of providing options for language, mathematical expressions, and symbols. What you want to do is ensure that you're building in supports so that your whole range of learners can access the content that you're trying to provide and can meaningfully answer questions. So I'm in here. The goal of this particular problem is for me to be able to answer a math equation. It's not for me to understand at this point all of the language associated with this.

So you have as a glossary term the term "denominator." So if I'm, for example, a native Spanish speaker and I understand math but I'm coming at English as a second language, I have the capacity to have these glossary terms embedded so that I can get that background knowledge so I'm able to answer the math problem.

This is readable by Math ML, which is the software program that allows for equations to be read by a screen reader and have those read logically as opposed to read as sort of some garbled statement. So Math ML reads these things in a logical sequence so that if I'm someone who can't see the equation, I get it in a logical sequence with my screen reader.

And again, you see this alternate version here, which is the long description of what the image is having, and you have the capacity for text to speech, so Texthelp toolbar, Texthelp is one of the companies that provides text to speech and many other affordances like highlighting and different things. And all this is meant to provide additional support so that every student is able to reach the same goal, which is being able to answer this math problem.

And if I'm an English language learner, I'm not at a disadvantage relative to my native English language speaking peer because I have access to these glossary terms. So representation is really also about making sure that we embed the kind of support that lets everybody meet the goal without ever lowering standards. So you're not going to – if the focus is to learn the vocabulary in a setting, maybe then in that case you don't get the glossary term. But if the focus is to be able to answer the math equation, then you give those scaffolds and support.

And then moving into the sort of higher level of going from just access to information into really options for comprehending information and making sense of it, making it relevant for what goals the learner wants to accomplish, and this is again an example from the National STEM Consortium work we did.

And what we did is we said, we understand that a lot of people coming into TAACCCT are coming from the workforce environment. They're not coming from – directly from a K-12 setting. They actually – as a relative strength they have is that they understand workplace learning, and they understand workplace contact. And so let's set algebra and math skills in that setting.

So this is Jay. He works in an electric vehicle technology company. He's learning his algebra skills. This was in the STEM bridge course, which is sort of a brush-up course on math and communication skills prior to entering five career pathways in STEM. And all of his algebra skills are set in the job context.

That was one thing we did to really aid comprehension for TAACCCT students was to set math skills in the context of the workplace. And additionally, to also make sure that comprehension wasn't impacted negatively, we moved something that typically would be in print into video format and then added captioning and transcripts. So we're not having to read about who Jay is and what the story is all in print if we don't want to.

We have the option to look at that as video. And for people who maybe have been out of school context for a lot of time, that can help with improving their capacity to really comprehend what's going on in the visuals, the setting of the workplace being that it's connecting to the background knowledge that they already have and helping with transferring generalization of this information.

So just to move quickly to a polling question here, we've got can you share other examples of technologies or practices that offer accessible and flexible means of representation? And our goal here was to ask this as an open-ended question so you could see one another's responses because you're going to learn as much on this webcast from what other TAACCCT grantees are doing than you are from what we're telling you here. So give people a minute here to answer.

Good. So Lisa's saying that they use Read Speaker within canvas as a built-in screen reader tool for all students.

So that's a great example of Universal Design for Learning, Lisa, where Read Speaker is text to speech. It's one of the main kind of text to speech providers, and what it does is it means that I don't have to go to the disability services office at my institution and identify that I have a reading related disability to access Read Speaker, which is text to speech. But it's available for any student that might want to use it, and the interesting thing about things like Read Speaker and text to speech is that they've found that far more people are using them than they thought.

So it's not just students, for example, students who have dyslexia that need to have text read to them to hear it in an audio format. It's students in anatomy classes helping improve their memorization of hard terms by hearing those terms read out loud. It's students who are learning pronunciation of terms who might be English language learners.

And it's students, for example, that are in settings where maybe they're just wanting to hear the information rather than read it because of the context or maybe learning course material while they're commuting to and from campus. So again, these kind of technologies that are essential for some, like text to speech, end up really benefiting a far broader range of learners when they're made available to all.

Some of you, for example, may be tired of hearing my voice, and so you're reading the closed captioning rather than listening. So it's good that that's available to all. And someone else said we have closed captioning videos and created accessible PDF handouts as the video content. That's fabulous.

Accessible PDFs are really critical, and if you just Google how to create accessible PDFs, that's something that you can get a lot of good information on on the web. That's a really, really important thing because if your PDF in your courses are not accessible, then you have students that literally cannot access your course material. And again, closed captioning of videos is critical, and these are basic accessibility requirements.

And, Tanya, this idea of textbook lessons coming with an online component where students can watch the lessons again from their own computers and prepare with tests and create note cards is essential. Being able to give people the capacity to have extra support to do some of these things on their own time and review is really critical for understanding that different people work at different paces as well.

Yes. OK. So I'm going to let people keep typing in there so you can share, and I'll move in. But please keep sharing some ideas here so you can get benefit from what one another are doing.

OK. So in this area, the second area is sort of multiple means of action expression. This is really the sort of how of learning. So not just what am I accessing, but then how do I take that information and turn that into demonstrating skill or turn that into performing a competency? How am I strategically acting on information that I've learned? So really critical here is that making sure the content and activities are available to assistive technologies that either amplify, magnify, or navigate curriculum.

So a quick example there is if I'm asking students to show what the supply chain is in a logistics company and the only way that they can do that is by dragging and dropping, then anybody who's not able to drag and drop or can't do that easily – let's think of a trade-adjusted worker who has repetitive stress injury and it's very hard for them to drag and drop or someone who has a physical disability and can't do that – they are unable to demonstrate that they understand the supply chain just because they cannot drag and drop.

Now, we don't care whether they can drag and drop, but if we don't make a keyboarding alternative possible, they cannot demonstrate that they understand the course material. So it's very, very critical that content and especially activities, embedded assessments, demonstration activities of skill and competency-based settings have more than one way to let people navigate through. Otherwise they can't actually demonstrate that they understand the learning goals that are targeted.

And then it's very important to help people vary the methods of response, and this is really where digital tools and the growth of online learning can help us create greater flexibility for more learners to show that they've understood material when we give them more than one way to respond, more than one way to demonstrate that they've understood things.

And then we really at the highest level – remember we said we really want to focus on self-directed learners. We want to support executive functioning, really that strategic processing by giving scaffolds around setting goals, planning, organizing, strategizing, progress monitoring. And I can bet that a lot of you in your learning management systems have a lot of these supports embedded in.

And we work with learning management system people sometimes, and they say, we make all these things available to support executive functioning, and people don't build them into their – they don't use them when they're building out their courses. So it's important to think about things that helping students be strategic by building in some of these supports like easily available calendar reminders, graphic organizers so they can see what the actual layout is of the unit, what they're supposed to accomplish at what particular point.

So very simple things you can do. For example, creating meaningful structure is very essential. It's essential for text to speech being able to navigate things, but it's also essential for supporting the sort of strategic processing that I know that this is a level one, this is a level two, this is a level three.

So just simply by using headings, the headings feature in Microsoft Word, you can start to create different levels of information and queue people visually to what – whether this is the main topic, a subtopic, etcetera, etcetera. This example of graphic organizers to help connect to content and support functioning is really key.

So here this was work we did with the round one and round two TAACCCT grantees around healthcare IT where there's an awful lot of processes to be understood and just ensuring that wherever possible we helped create graphic organizers so people could understand how different components connected to one another and then again creating text descriptions of these organizers so people could have that alternative, if the visual was not effective for them.

But these are very critical for helping people understand how one component relates to another, and in a lot of the material covering is quite complex, doing this is really important, supporting this kind of strategic processing that students must do.

And then this is an area sort of varying the methods of response. So increasingly now you have a lot of mainstream tools – VoiceThread is a good example – that allow student learning online to submit responses or answer a question – say a teacher puts out a question – in many different ways.

So this is one from a software we've developed at CAST called Curriculum Tool Kit, but if people want to respond to a question in Curriculum Tool Kit – so Curriculum Tool Kit is an online environment where a teacher can go in and create an online core – they can do that by typing, by drawing, by uploading something, by using their embedded microphone in their computer to speak their answer, by creating a chart.

There's many, many of these tools now that exist, and what this does is it lets you get a much better picture of what your students actually understand. So if you're giving them more than one way to respond to your question, you're going to get a better read on what they actually know. And there are many mainstream tools now that you can use – VoiceThread is just one – that are freely available that you can build in to get more richness in how students respond to information.

And then really critical in this area is helping students act strategically. This is a large initiative out of the University of North Carolina university system project that's supporting students with learning differences. They have been operating for a few years now, and they have a very large system-level Universal Design for Learning initiative. And one of the things that they've done is to enhance progress monitoring.

Progress monitoring is the capacity for students or teachers themselves to really know what progress the student is making along the way so that we're not just assessing what they understand at the end of the course, which we at CAST like to call autopsies because they tell us, hey, the heart wasn't working that well. Well, thanks. You're telling me that at the autopsy.

Progress monitoring is really seeing along the way how can we get a better read on what students are understanding at a smaller unit so that we're able to actually maybe change our instruction, maybe give the student more support, maybe send them to a tutoring center so that they can improve their skills and then ultimately do better in the course because we've been able to adjust and correct either learning or instruction along the way rather than get information at the end that they didn't understand the material.

So the College STAR initiative has created a very innovative approach to progress monitoring, and what they've done is they've taken in these sort of courses – these are largely STEM courses that have very large enrollments and very low pass rates. So these are sort of like your Chem 101 courses that a lot of students historically don't do well in, and they've trained tutors who are students that have taken that course before and done well in it and they've trained them as tutors in Universal Design for Learning.

These tutors give both live and online recorded tutoring sessions for any students from that course that need it. So they basically take the course material, and they reteach it in different ways. They give additional support, and they also sit in on the course. The tutors sit in on the course, and they give professors feedback based on sitting in on the course and conducting these tutoring sessions and knowing Universal Design for Learning on what students are or are not understanding.

So if you think of your tutoring systems in your TAACCCT work, it's a really innovative place to actually be able to intervene to improve how well we support diverse students just by giving some of those tutors some support and training in Universal Design for Learning. And the interesting thing is the College STAR tutoring initiative improved retention rates by about sort of 16 to 20 percent in different courses than the department average.

So the courses where this tutoring existed had an on average graduation rates of those courses that were 16 to 20 percent better than if this tutoring was not present. So this is a real area to help students be strategic, give them support, give the instructor feedback on how well students are progressing so they can adjust instruction.

So again, we're going to go to another question here, and if you can share information with one another, that's great. Can you share some examples of technologies or practices that offer accessible and flexible means of action expression? So areas where we're accounting for the fact that this how of learning, this demonstrating understanding is going to take different forms for different students, can you offer some examples of what people are doing to help students have more opportunities to build skills and show what they know in different ways?

OK. So we're going to let people answer here and, just in the interest of time, move on a little bit. But Lisa has a good point of students being able to submit assignments by a writing, audio, or video submission. That's fabulous. That's a great example, and that's not to say – the important thing for people to know is none of these things are meant to kind of remove requirements around improving writing or oral communication, if a professor's asking a student to give a presentation in front of the class.

They're meant to give alternatives where that makes sense and continue to build on those goals where they're the target of instruction. So if the target of instruction is having students demonstrate their understanding of healthcare IT, there's no reason why we can't provide this richness in how they submit their assignment, these options so that they can demonstrate what they understand about healthcare IT.

So in the third area of multiple means of engagement what we want to do is provide opportunities for self-assessment, provide options for recruiting interest and sustaining effort, ensuring that content is contextualized to interest and experience of the learners, and that learners are motivated, which increases persistence and retention. And much of our work here at CAST is really focused on engagement.

So one of the things that we really did with the National STEM Consortium is worked on bringing case-based learning or the case method into these sort of developmental math and communication skills so that they were contextualized in this way. And cases really are great for environments where people really want to learn in a certificate or career pathway so they can go back into the workforce because they provide a step before learning by doing.

They're as close as you can really get to learning on the job. And they help leaners problem-solve issues and learn from one another because they're more focused on having students interact with one another and interact with the characters in the story than just giving them a problem, and that's great. But, Lisa, your fire, I love this. Whatever college you're at, I'm coming.

So one of the things we did there was think about how you provide some options for recruiting interest, and I won't spend long on this because I showed it with the example of Jay, but here we had Kelly. This is on a unit on communication. And Kelly is a trade-adjusted worker. She is coming at working in air traffic control from another career, and this is her having an internship at an air traffic control tower. And the introductory story kind of connects people to Kelly, tells about her background, is a similar person to who they might know, and then all of the challenges are contextualized.

So the whole unit focuses on a major storm that's coming up the coast, and it's going to impact all these different air traffic control towers. And they're needing to connect one air traffic control tower to the other, practice their listening and speaking skills in this contextualized way of anticipating and troubleshooting this big storm that's coming up the coast and is going to do things that bug all of us like delay flights.

So again, we recruited interest by using the sort of contextualized challenges, but then there's some options for sustaining effort and persistence where all of the communication assessments, the assessments that are embedded in the course, are all tied to this big storm coming up the coast. And they have to use their listening and speaking skills to solve this problem to help Kelly do her job, essentially.

So other examples or technologies that you've used in your setting that have really provided accessibility and flexibility in terms of motivating students or engaging them because that really is really key, especially for TAACCCT learners that often have been out of school? Maybe this is their first experience of really enjoying being in a formal education environment. So engagement we really see as so, so key.

So I'll let people put some different options in there, and I'm going to pass it over to Christina to share some highlights, some resources from our UDL On Campus.

MS. BOSCH: Great. Thanks, Sam.

So we just wanted to point you all to our website, udloncampus.cast.org. As we've mentioned here, we have a lot of resources that are particularly relevant to what we've covered today, information or pages on your legal obligations for accessibility, VPAT or voluntary product accessibility templates, equally effective alternate access plans, and we have a nice list of postsecondary institutions with UDL initiatives that we would love to add you to.

We also have a lot of resources on there around flexible multimedia, how to design text images, incorporate video, and ePUB, materials like that that are digital in ways that are going to be accessible and also going to embed options that reach the majority of your learners. We have information on OERs and webcasts and web conferences as well and then also tons of other stuff on assessment, teaching approaches, and we're working on improving this site right now actually.

So we are also going to ask that you do one last polling question for us. This is going to be really, really helpful in terms of designing our site in ways that really end up making your life easier.

So which of these is a priority for you right now in your work? Selecting accessible technology, learning about how to create accessible learning materials, providing options for assessment, designing curriculum with UDL, and I think we would include under that one of the last questions here around how do you design for the full variety of learners that are out there, and what about programs that require essential functions. I would say that that would fall into that category.

And then finally finding ways to vary engagement for learners or other. So we really appreciate your responses here.

And I think that after this we wanted to just close with a slide that has a couple conclusions that we can really quickly sort of go over, but mostly I think we want to end on the accessibility checks and content creation resources. So here we have a lot of links for you, and again, if you download this, you'll have access to it.

And that's it. We want to maybe just quickly get in any questions that we did not answer yet. And so I know a lot's been going on in the chat.

The PowerPoint should be under the file share pod.

MR. JOHNSTON: Yeah. So that's a good question about this idea about what about health science programs which require essential function in these very areas. So again, accessibility is a start. The definition from Office of Civil Rights means that the student needs to be qualified for the program. That said, an awful lot is changing in terms of people understanding, A, how different environments function and when you build in and design from the start for everyone, what functions are required.

That's not to say that in health science there are certainly essential components that need to be met and people need certain abilities, and certainly we're not discounting that at all. But there is a need to start thinking about when we design for everyone in the postsecondary setting, what does that mean for how students can then learn in the workforce and be in the workforce?

And it's important to know that the new Section 503 reauthorization actually is the first affirmative action policy for hiring individuals with disabilities where anyone who's a federal contractor is required to think about having 7 percent – to try and proactively gain 7 percent of their workforce be individuals with disabilities. And that's across all job categories from entry level through to senior management.

So I think it's important to say that there is a need and a growing importance in many areas to be reaching out very, very actively to having people who are from different abilities, different strengths and weaknesses to be part of your various workforces.

And we've seen this with cultural diversity for sure, and this has happened extensively in education as well where people would say, well, you can't have a principal of a school who's blind. And all of a sudden Boston, I can say one of the best principals of any of the schools, wrote a book on being a blind principal and why that actually qualified him more for the job. So I think it's very important.

People have to be able to meet the expectations of a program and the subsequent job and be able to perform tasks. That's key, but I think that there also is room to think about what happens when we design for everyone from the start and how does that in some ways change who we see as qualified for a job?

So I don't have a perfect answer there, but I think that's a really important thing to be thinking about because having diversity in the workforce and having role models for typically underrepresenting groups is very, very critical for getting – for improving the quality of care in healthcare, for example.

So any others that were key to – OK. So I think most have been answered, and we're happy to follow up with people through udloncampus@cast.org is our web link. You can definitely reach us. Feel free to ask us some more questions, and again, we'll do another website – webcast in the fall for everybody as well.

MR. BELLINO: OK. Any last words for Sam or Christina before we wrap up? Aparna, do you want any wrap up?

MS. DARISIPUDI: Just thank you so much, Christina and Sam. We look forward to more info sharing and further discussion. Everyone have a good day, and look for the webinar posting in the next couple of days.

(END)