[MARY ZATTA] Hi everyone. If you are worried about audio you should be hearing me now -- thank you for joining us today. We will put you back on mute, but we will be turning it off in a short time as we begin the workshop. Thank you. Hello everyone and welcome to Perkins eLearning webinar series. Today is Wednesday, September 18, 2013. I am Dr. Mary Zatta, educational resource manager for Perkins eLearning. Let me welcome you to today's presentation: “Effective Access to Communication and Literacy for Students with Visual and Multiple Disabilities.” Perkins eLearning webinars are presented throughout the year on a variety of topics and interests to those of us who work with students who are blind or visually impaired, including those with additional disabilities. If you are interested in getting information about future webinars, and/or other teaching resources, content which includes publications, eNewsletters, webcasts, etc., please visit PerkinseLearning.org.

Every month we are joined by new attendees, so before we get started, I would like to review a couple of things about the technology. If you are not seeing the Perkins welcome screen now, please click on the Adobe meeting icon at the bottom of your screen. It may be running in the background. Also, to keep noise levels in control, you are in a listen-only mode for the presentation. A question and answer space will be provided on the screen shortly, and we encourage you to post your questions as they occur to you during the webinar. We will address them during the end during Q&A. At times during the webinar, the presenter will poll the audience to learn more about your own experiences. You will answer the poll questions on your own screen by clicking or typing in your response. You may see a pop-up screen asking you about how you will choose to receive audio for the webinar. Just click on the cancel button on the screen, we have preset that for you.

You do have individual controls for your screen, you may choose to enlarge or minimize the captioning area, for example. You also have individual audio controls for your computer speakers. Part of the introduction is to give you time to make adjustments as you need them. This event will be recorded and available tomorrow on the Perkins website, and that will include a PDF version of the slide presentation. Look for a follow-up email from Perkins with more information, as well as a link to the feedback survey and online assessment, and that is in case you wish to earn credits. Thank you for joining us for this event, please let us know if there is anything more that we can do to ensure that you have a good experience as you attend this webinar.

And now, it is my pleasure to introduce today's speaker, Faye Gonzalez. Faye has been in itinerant TVI and COMS since 1987. She currently works for the Madison School District in Arizona. She specializes in using assistive technology for children with visual and multiple disabilities. Faye is also a frequent contributor to the literacy blog. Her passion is helping our extra special children be more independent and better able to communicate with their friends and family. Welcome, Faye.

[Audio muted]

Faye? Can you hear me? We are not getting your audio. Is that better? Can you hear me now?

[FAYE GONZALEZ] That's great, I think that is better. Everyone good out there?

[ZATTA] Sorry about that, I did not realize. I think we need to ask you to start over.

[GONZALEZ] No problem. Today we are going to be talking about kids with visual and multiple disabilities and I'm not going to talk so much about what exactly you should teach regarding communication and literacy, but I want to focus on how we can provide really good access to communication and literacy for this population. Here is a little bit about myself. I went to the University of Arizona; I am a teacher of the visually impaired, as well as an orientation and mobility specialist. And, I would like for you guys -- if you could do the little poll you should see popping up, tell me a little bit about yourself. That way we could just kind of see the people we have out there watching with us today. I have also done some core assistive technology, but I primarily work as a TVI with kids that have visual and multiple disabilities. So, that is really my passion. I see we've got a little more TVIs then we do have other areas. I saw when people checking in there were actually some OTs in attendance, so that is nice; and some speech people. Wonderful. And only one paraprofessional, you guys are the superstars. I wish there was more of those. So, okay. That's great, thanks a lot for letting me know a little bit about your backgrounds. It looks like you guys are mostly TVIs, but I am glad we have more people than just that.

Here is what we will talk about today. We are first going to go over a few characteristics of this population. Whenever I have on my students MDVI, that is a short way for students with multiple disabilities and visual impairments --you look at, first of all, how to properly select and use an abstract symbol system with this population. Then we will talk about the assistive tools that are really commonly used to support literacy and communication, and how to use those tools more effectively with kids that have multiple and visual disabilities. Finally, we are going to talk about how to modify the environment and materials for more effective access.

The focus of my presentation today is that when you set up communication and literacy for students with multiple and visual impairments, when you set it up so they have great access to that, to the communication and literacy happening in a classroom, that is when you will see success. We have to ensure access in order for our students to be successful.

Some of the characteristics of this population; we usually see that their vision issues are mild to moderate. But the vision issues they have are usually combined with some kind of physical thing, what is wrong with their eyes or optic nerves, along with the visual processing problem. That is because typically this population of people with multiple disabilities, they are typically in their situation because of some kind of prematurity or birth trauma. The thing that really stands out with this population is that their visual impairment, while it is there, is not the first thing that you think about. When you think about the problems these kids are having - you guys should see a poll popping up, and there will be a bunch of different characteristics that hopefully you guys have seen with your population of students with multiple and visual impairments. If you can just check any or all of these things that you have seen in your students, that would be great. I bet we will get lots of people with brain damage and verbal skills. Sometimes you may or may not see behavioral issues. There is usually some level of cognitive impairment involved. Interesting see the limited verbal, almost everything is up there above 50%.

So, if we look at -- thank you everybody -- if we look at a list of some of these things, I bet most of your students have all of these issues, including seizures. A lot of people are medically fragile. Like I was saying, behavioral issues sometimes pop up because of difficulty in communication. Here are a couple pictures of my students that have multiple disabilities and visual impairments. You can see in the picture here, this particular student is set up with a feeding tube, this student is in a standard and this student is in a wheelchair. These kids should look really familiar to you guys that work with this population. One thing that is interesting about this population is their vision problems can be a really hidden issue. But, the reality is, Dr. Roman-Lantzy tells us that over 40% of the brain is devoted to visual functioning, which is really a lot of what our brain does. And, so, when you look at that statistic, it is really not surprising that so many of our students also have visual issues because of their cause being brain damage. I am not seeing my PowerPoint anymore -- I am not sure what happened to it -- if one of you guys can make that pop back up, that would be great. I am not really sure what happened there.

[ZATTA] Faye, your camera just went off and I think we have the PowerPoint back up, are we on the right slide? Okay, we see you, now we need your audio.

[GONZALEZ] Okay. Sorry about that technicality. Of course, technology never does what you want when you want it to do it. So, anyway, the whole thing about so much of the brain being devoted to visual functioning really leads to why so many kids that are multiply disabled also have vision problems. And really, about 80% of our children are learning, typical children, are learning to visual cues. So one of the problems is people -- kids that do have their the visual system intact, it is really hard for them to do that to have that natural incidental learning that occurs for most kids especially from birth to age five. It becomes a big challenge for our kids that are multiply disabled. Now when you are looking at communication and literacy with this population, you know personally, I think of communication and literacy as being two separate tasks, speaking and reading and writing. But for this population, they are really intertwined and it is kind of hard to separate where communication ends and literacy begins. But, really, I like to think of both of these skills for kids with multiple disabilities as a way for them to share with other people.

And, the biggest problem I see is with this population, people generally are not using a symbol system in the correct way. A lot of times people are trying to use a symbol set the student that is multiply and visually impaired is not able to access. That is the problem we are going to try to talk about answers to, today. So, a simple system, the ultimate symbol system is, of course, print or braille and our spoken language. Usually with this population, the common alternative, when you can't access print or the spoken language, would be some kind of similar photograph-based system.

There are couple pictures down there that are examples of a communication device. The two biggest problems I see as far as the reason why kids with multiple disabilities aren't able to be successful with communication and literacy, is first of all that the materials with symbols, generally speaking, are very visually complicated; too visually complicated for most of our kids with visual impairments. And the other problem is that often times the student’s learning medium, how they are gaining information, isn't considered and because of that, the incorrect type of symbol is chosen. We are going to talk about what you can do for both of those issues.

The first problem is that the symbols that we use, and the two main symbol systems that are really in place right now, are board maker symbols and symbol sticks, and both of these symbols, while we as typical adults think of them as an easy way to represent language, they are actually -- the drawings are very abstract. The parts you usually need to be able to discriminate in order to figure out the meaning are really pretty small. And what you have to remember is that while we usually put text labels in our materials in the symbols, like here is one I have right here, while we put this text label at the top, really the text is for us as staff. That way we are using the same language. When our students can't read the text it makes understanding what the picture represents a lot more challenging.

Let's look at some pictures here and I took out the text label. They are not really uncommon pictures in board maker, but let's see if you have any ideas of what these symbols might be representing. There should be a poll popping up where you can type in what you think any of these picture symbols might be? Number four on the screen, I had a student, several years ago, that read that symbol to be slice and bake cookies, which I wish that we were talking about slice and bake cookies every day, that would be great. I've got drink, I want to drink. No guesses on what the guy with the funny hat is. I see not a lot of guesses on what the bowl with popcorn and the hand might be, so that just illustrates that we think these pictures are easy to figure out what they mean and they are actually pretty hard to figure out what they mean.

Let's go ahead and look at the next slide here. And let's look at what they actually are. So more, a lot of you got that one, the one with the hat is actually too little which is kind of a weird one and my student was close on slice and bake cookies; it’s actually just slice. That was an example of how the picture doesn't always actually illustrate what we think it does. The other thing to consider is most of the students are visually impaired so most of them are not seeing the same amount of detail as you and I do and typical students do. I took out the text and blurred these pictures to show how hard it is to figure out. We can all see there is kind of a blob and something in the middle, they might be faces -- I think they are faces, but it is pretty hard to tell the detail of what's inside these pictures. If we flip to the next slide, you can see happy, sad, scared and mad. Interestingly, if you notice on the one for sad, the part that tells us the picture means sad is the fact that the mouth is downturned and he has a little teeny tear underneath his eye. The tear is so minuscule; it is kind of ridiculous for kids who are visually impaired. We can see why the kids struggle with using the typical symbols we usually use with most of our regular special needs population.

So, the first thing I do is I generally use much larger symbols. Our students are usually used to one to one and a half inch size. I use symbols that are usually 3 inches square. One thing to remember about the size is that the size is even more important if you are working with the student that has limited motor skills. Everybody else can lean forward toward the materials or bring the materials closer to their face and that naturally makes things bigger. If you have a student that can't do that, it is even more critical to make them big enough, that way they are able to see the details despite the fact they can't get closer to the materials. The other problem that happens a lot is that glare and lighting becomes a big problem. We laminate materials for the sake of their longevity, which makes sense, but the laminate, a lot of times, causes a big problem. Here are a couple pictures you can see of some laminated materials and AAC devices that have a computer screen with a touchscreen. Generally speaking, those devices with touchscreens have a lot of glare issues. Let's flip back here. Some of the things you can do for glare, the biggest thing is I am constantly checking the student’s eye level to see if there is glare, and if there is I will do a lot of repositioning lights. If they are coming in from the outside, from behind them, moving things a little bit so the glare goes away. Again, because kids can't do this sort of adjustments themselves, typically it is important we are constantly checking to see if there is a glare factor there.

A couple of other tips for better ways to use symbols is to simplify. Simplify is really critical. The first thing I do is use extra spacing in between the symbols. And for this reason, I tend to use symbols rather than a printed board that is one flat sheet of paper. I tend to use symbols that are cut out so I keep all my symbols separate, rather than having a traditional communication board like we usually think about. One of the reasons for using separate symbols, it is a little harder to manage for staff because you have to make sure you don't lose them, but you can quickly modify for students that maybe can only handle seeing three symbols at one time or another that can handle four or five at a time. It is easy to take some things off and also it is easy to add extra spacing. I love to use these black background materials. There are a lot of these Velcro sensitive blackboards you can get through federal funds, or the Printing House for the Blind, that are fabulous and if you just space the symbols out more there is extra black spacing, it helps a lot.

Here are a couple of pictures. You can see this particular student here in the up for right-hand corner – it really works for him to have the symbols arranged out in one line across rather than having a two by two or two by three arrangement. Other students, like the girl on the left, it is not a problem for her to deal with things that are arranged not just in one line. In this picture here is another piece of equipment available from the Printing House for the Blind. The great thing about the Invisiboard is it is like a big Velcro sensitive black folding board, like you would use for a science experiment display board. The thing that is great about the Invisiboard is it is just fabric on plastic, heavy-duty plastic. If you have a matte knife you can actually cut it. I take these big Invisiboardsand cut them down into smaller boards a lot of times for my students to use.

The second problem with the symbol systems that we are not usually thinking about the student’s learning medium when choosing the type of symbols we use. For those of you that are not familiar with learning medium, the learning medium is the sensory channel the student uses for learning. So they could use vision, visual information, tactual information, auditory information, and usually students have one channel as the primary way they gather information, and a lot of times a secondary way they gather information. The thing about the learning medium is that is kind of an expertise of the teacher of the visually impaired and my experience is that when you are thinking about what kind of symbols you are going to need to use for the particular student, it is vital for the vision teacher and speech therapist to very closely collaborate on determining the selection, because the speech and TVI each have a separate piece of the knowledge base that has to go together for really making effective access there.

So when thinking about a visual learning, somebody who is primarily a visual learner, our standard visual systems are print or line drawings and there are quite a few less abstract alternative for kids that have trouble with the standard abstract, two-dimensional line drawing. The first is objects, parts of objects, photographs are for many but not all students. They are less abstract than a line drawing because it looks more like the actual item.

And then, you can also use photographs as symbols where you have simplified or enhanced elements of the symbols. I call these visually enhanced symbols myself, and one of the reasons why we need to modify sometimes some of these two-dimensional images, has to do with children that have cortical visual impairment. So cortical visual impairment is a visual impairment caused by damage to the visual cortex in the brain, and for those of you that are TVIs, interestingly, Dr. Roman-Lantzy says that if a student has a CVI range score of less than six, we should not be using two-dimensional images and that they are really not ready for that sort of two-dimensional abstract representation of an actual object.

So, for kids that score less than six, even if they are a visual learner, we need to think about using objects or parts of objects instead of a two-dimensional image like a photograph or line drawing. Then, what we can do when kids start improving their CVI score over time is you can start teaching them to use more complicated, more abstract symbols as time goes on. But, the visually enhanced symbols are a great idea for some of the kids that seem like they should be able to learn to understand the two-dimensional image, and yet we see them struggling with it. You can do things to make them less visually complicated and easier to understand like taking out the text, highlighting elements, and Board Maker actually has a high contrast symbol library which is great because most of these modifications are already done. These two symbols in the bottom right-hand corner here are from the Board Maker high contrast library. One thing to note is when you do take the text out of symbols, which sometimes is really necessary in order for people to be successful, it's important to write the actual labels on the back of the symbol, or if you are using a tactile symbol like this, to write the text on the back, and that is because having a text label helps staff to be more consistent with using the same language surrounding a symbol, which of course helps students to learn faster. You can see on the top I have a continuum of symbols where I have reduced the complexity, with the first to our standard and the Board Maker library and the next three, as you go from left to right, are just more and more visually simple

Another thing that we can do is sometimes children with visual impairments - sometimes they don't experience large items from a distance the same way we do, just because a lot of times kids with multiple and visual disabilities don't really see things very much for more than 4 feet or 5 feet away. So, the bus is a great example. The picture for bus is something most kids with multiple and visual disabilities don't really experience. Instead of having the yellow rectangular shape school bus for the picture, it might be better for an image for bus to be a seatbelt, or maybe it has to do with the wheelchair lift because that is how the student gets on the bus. Thinking about what does the student actually experience related to that language and using an image that better fits them is important there.

And, for some reason -- there we go -- that is visual learners. For tactual learners, there is also kind of a continuum of abstract symbols. There is not really a good alternative we used typically in the classroom, so less abstract symbols for tactile learners would be either single objects or partial objects. The critical thing for a tactile learner is not to use too many objects. The example would be as if you use a plastic symbol and apple is the symbol. It feels like a really small piece of plastic and doesn't feel anything like what an actual apple feels like. It's important not to use many versions of things as tactile symbols. It's important to use pieces of an actual object that is related to the activity. The real challenge for tactile learners is that a lot of the really common language that we use, like verbs, adjectives, chat vocabulary, like “I like that, it's my turn.” This language does not lend itself very easily to a tactile system. Nouns are super easy, but you can see in this picture here on the left, this is a student schedule, a tactile schedule. You know, she's got -- that's easy to tell she has math, she believed that if you look at the symbol on the right side for math. I like that. When you start getting into things that are not nouns, it is much harder to represent them in a tactile way.

This particular student loved pom-poms so we put a piece of the pom-pom on plastic as being the student symbol for “I like that.” That is the best tactile symbol I can show you. I mean, the more you get into adjectives and feeling words, the harder it is to choose a symbol that really is a good tactual representation of what you are intending. For that reason, a lot of times students that are tactile learners, we end up using an auditory system because that could be easier for them to access the language that we are trying to represent. So, let's look at auditory learners. The standard auditory system obviously is speech. Less abstract language is our gestures, facial expressions, and really nothing else between gestures, facial expressions of speech. We are stuck with other areas; we could sort of inch towards a more standard system. In this one, there is really nothing in between the two

So, what is the best thing I have found to do is to first of all, think about possibly using auditory feedback along with their secondary learning medium. If they are an auditory and visual learner, we might use of visual system combined with auditory feedback; same thing with the tactual and auditory learner. There are some kids that really end up needing an auditory-only system and I will show you an example of one. The image of the student on the left is a student that was really just an auditory learner. He was too severely visually impaired to see visual symbols. He did not have the skills motor-wise to use tactile symbols. He actually has his communication device hanging on the back of his wheelchair and he has a switch on his headrest, you can see, so he is only accessing his communication device by listening. He is doing auditory step scanning and that works great for him. It felt weird for all of us because he wasn't looking at the screen, but even if we put it in front of them, he wasn't looking at the screen anyway. It just became a barrier thing in between him and another person. So we just hung it on the back of and it worked really well.

Other things you can use for auditory learners is you can teach them to do scanning in a simplified way. And the next slide has a picture from a new device from Inclusive TLC called the Smooth Talker. This is a sequence-to-message device similar to a step-by-step. This is a device called the Big Top Triple Play made by Enabling Devices. These are all devices that play a series of messages we've recorded back in order. The nice thing about the Smooth Talker from this company, Inclusive TLC, is it has an auditory scanning mode and in auditory scanning mode it will speak the list at a quieter voice and when the student chooses the item from the auditory list she wants, then that plays the message they selected at a louder voice. It's really a nice in-between of a complicated device that has multiple screens where they are accessing it through auditory step scanning, and nothing. That is good for kids that are auditory learners. I really find with auditory learners it's really, really critical to give them even more time with the staff modeling the use of their systems.

When I have an auditory learner, I try to think of my personal target of the ratio between how often do I expect them to use the system and how often do I model the system. I try to have that be an even ratio, so I am making sure I am modeling the use of their device or the use of their tools half the time, and only asking them to use the other half the time. So, you have to consider a typical kid hears people talk for one to two years before we really expect them to be able to communicate, and we just give the students with multiple disabilities devices and expect them to magically know how to use them when they don't get them. When they don't understand in a week or two and staff is even a model that for them, we are confused about that which we should be, it should be obvious they need more time and people to model. I find modeling is critical, obviously with all kids with multiple and visual disabilities, but very, very important for auditory learners. So, we have kind of talked about the symbols set that you are going to use and how you can more effectively tailor that to the kid’s needs.

Now, let's look at assistive technology, devices. There should be a poll popping up on your screen and there are some really common assistive technology tools that we see in a lot of these classrooms with kids with multiple disabilities. Probably people are going to have experience with most of them in their classrooms. I see the one that is the most common is picture-based symbols, a lot of people step-by-step environmental control units, and switches -- glad to see all these devices are really common for everybody else. These are kind of just an everyday part of classrooms for kids with more involved special needs. Let's go ahead and go to the next slide here.

The thing about these devices, such as step-by-step switches with environmental control units, is classroom teachers use these devices to support communication and literacy. The challenge is that they’re often not using them correctly for kids that have multiple and visual disabilities. So, the thing that is important is that rather than having it be a barrier, if we can teach the classroom staff how to use them a little bit differently, it is a lot more effective for kids with multiple and visual disabilities. The thing we need to consider is each student’s individual visual functioning and that is kind of the TVI area of expertise, but then it is critical for the TVI and the other specialist, like the speech and language, OT, and PT, to coordinate really carefully when they are looking at how things need to be set up for best access. Sometimes a visual need and the motor need don't always work easily together, so sometimes there is a lot of work that needs to be done figuring out what is really the best way to use them.

The first thing that is really critical, looking at these devices, is we have to position the devices and the student and place and set everything up in just the right way for the student to be able to be successful. The challenge with this is really how these devices are commonly used in the classroom. Here is a picture that is an example - typically there is only one or two of these devices because they are expensive and not enough funding for everybody to have their own step-by-step, so usually the teacher is holding the device in a group situation where there is maybe four or six students in a group and they are sharing the use of the device between students. It might be circle time, somebody is supposed to say good morning, use a device, teacher holding it, she reaches out in front of one student and says good morning, how are you today? They are supposed to hit the switch on the device to say good morning, and they go to another student and do the same thing. The challenge is this sort of moving target that's not always in the same place, the teacher is holding out for maybe five seconds, maybe 10 seconds at best, before we move on to the next student, is not the ideal situation for the kids that have visual issues. So, when you have students that have multiple and visual impairments, it takes a lot longer for them to integrate the visual information along with the motor output that they need to do.

And the challenge with visual and motor integration is usually so tough for our student; the timeframe is not just long enough for them. Also, the teacher might be holding the device in a place with the student, but they can't even see it so they may not even be aware there supposed to do something. What we do in my district is we figure out the spot that is best for them to access devices like this and we make that a permanent mounting location. Let me show you some examples here of some pictures that show what that means. In the upper left-hand corner here is a student that is using a step-by-step, as you can see it is on the chair behind her, but she is not actually directly accessing the step-by-step - she has her own switch which is mounted on her armrest, in the exact position that works best for her, so whenever she is using a classroom device that is shared, she has her own switch. The set up would be to just plug it into the classroom device and she knows my switch is always right here, always right in this place where I know where it is and know how I am supposed to move my body to get to it. That way the student doesn't have to re-figure that out every single time somebody presents something on the device. One of the problems is setting up mounts for every student is expensive. Luckily, we found the stuff here called Loc-Line and it is flexible, modular housing. You see on the slide there I reference the website ModularHose.com where you can get this set up. The thing that is nice about using modular hosing as a mount for a switch is it is very inexpensive. The amount you see pictured on the slide is about $30 compared to hundreds of dollars. It can actually be pretty cost effective to look at each and every student having their own mount and their own switch and they just plug into devices as needed. The other thing is some students really are able to perform the motor part of the task better if they are not actually looking at the switch.

The other picture is a picture of a student who could use her hand and was able to activate a switch with her hands, but what we found was with having the visual feedback that she had to try to process, it made it a lot harder for her, and she was actually a much more proficient switch user with the switch at her head. A lot of times I have students that could use their hands, but they are faster using their head and that is what we do and it is more effective for them that way. Another thing about using the common tools we have in the classroom more appropriately is we have to think about you - your own body and visual complexity compared to what our students are looking at.

Let me flip to the next slide and show you a couple of pictures. Here I am holding up an arrangement of four symbols, which are the exact same symbols on the exact same background - spacing, larger size, doing all the things we talked about earlier. The difference is me in the pictures. In one I am wearing a plain, single color shirt and in the other one I’m wearing a Hawaiian shirt. Also the only other difference is I turned around 180 degrees in each picture and in one the background is nice and clean for the webinar, like for the webinar today, and the other one is my office - a busy place. We need to think about how the background and how our own body and gestures we are using might be adding visual complexity for students and deter students who have a problem with visual complexity, which honestly pretty much every single kid that has multiple and visual disabilities does. We need to figure out how we can reduce that complexity by being specific about where you stand, standing in front of a clear background -- I try to only wear single color clothes when I am working, just to take away that complexity piece of it.

And of course giving extra processing time is really important too. The other thing we need to do besides using the right symbol system and using the tools more appropriately and thinking about the positioning and everything, is to modify the environment - literacy and communication environment, and modify the materials for literacy and communication more appropriately. Once again, the focus is really access is the key to success for this population. So, when we are looking at modifying the environment, the first is to simplify visual clutter. I love using black backgrounds. I showed you some of the things I used for black backgrounds; here are a couple of pictures. You can see on the bottom there is the Invisiboard. The computer station is a spot where I find there tends to be a lot of visual complexity, so setting up the Invisiboard the way it was intended, not cutting into pieces, but setting it up on the computer, is a way to take out a lot of visual complexity there. The top two slides illustrate something about visual complexity.

We can see in one of the classrooms there is a little switch station set up - one of the things is that you press a button, the light turns on, sound comes on, and it makes it seem like the waterfall is actually happening in real-life, when it is just an actual picture. The left side picture shows the way the station originally was set up, which was junk everywhere, as you can see through to the other half of the classroom. This is just the reality of a lot of our classrooms. There is not a way to change the fact there are lots of things that we need to have on hand because each student has their own needs, but this particular student I work with, because of his visual impairment, he wasn't able to sort out what visual elements were important to him, so he couldn't figure out that the red thing is the switch I am supposed to touch that in order to make something happen. But when we put up a dark blue shower curtain that just covered up all the background stuff, he can do the task perfectly, independently. Sometimes just a simple thing of looking at the background makes a really big difference for students that have visual difficulties.

Some other environmental modifications are to, once again, think about lighting and glare. It’s especially critical for nonverbal students. Producing extraneous noise is important that sometimes also a challenge because these classrooms, self-contained classrooms, are usually a busy place - lots of people coming in and out. But sometimes kids have trouble processing two sensory channels at one time. Sometimes they can’t process visual information at the same time that they are processing auditory information. Sometimes cutting the noise down is critical. The last one is one important in general; let's think of ways to make it easier for staff. Here are a couple things I do. At the top you can see pictures of communication cheat sheets I use. One side explains how the particular student says yes and no and the flipside explains how that particular student is able to make a choice. I have these cards hanging on the back of most of my students’ wheelchairs, that way no matter who works with them you can remember how each kid communicates.

Another one, the lower left-hand corner, is something one of my assistants came up with. It is the fact that sometimes you have a message that is really important to communicate to everybody that is working with the student, yet there are so many adults that work with the student, it is hard to remember to translate the message to everybody. We just laminated blank pieces of paper and hung them on the back of the wheelchair. Then you can use a wet erase marker to write whatever that critical note is. Everybody that works with that student can look down and read it all day long. It is easy.

The last way to make it easier to set up the materials is I really am a strong proponent of color-coding all the switches and things you have to plug them into. It only takes an extra minute to follow the red switch down to the plug at the end, but if you are doing that 15 or 20 times a day, that's a lot of extra minutes. I color-code on the device so they can see red switch plugs into the place where there is the red mark. It just got a lot easier that way. Color-coding really helps the staff to be better able to set up the things more quickly.

The last thing to do is to appropriately modify materials. A lot of the same things we talked about with the symbol system and the environment are equally as important when modifying materials. It's critical to reduce the visual clutter, simplify materials, and think about being cautious with lamination. Once again, I really like to use black backgrounds and extra spacing. Let me just show you a couple of examples. The left side image shows the rest of the class doing a paper-based worksheet that had to do with circling the one they had more of. This set that had more. It's pretty common to use paper-based worksheets, but a lot of time kids with visual impairments are not able to handle the two-dimensional worksheets. We modified it -- I used really large numbers and we use actual objects, and placed it onto a board. That way he could use his eye gaze to look at the side that had more. He is doing the same cognitive tasks; we just changed how we presented it. Same with the image for bugs - it was a printed handout that had parts of bugs and everything was labeled and we simplified it for the student that had a visual impairment to be better able to access it.

So, really, in summary, a key part of being accessible for kids that have multiple visual impairments is being able to access all the stuff. If we don't think about how we need to change or do things differently with this population because of their visual impairment, the access becomes a barrier to them being effective communicators. That is hypocritical with this population, and collaborating regularly is a big key in understanding how to do the access. Sometimes it takes a long time and people working together to figure out how to make it work. I believe all our students can do it; they all are communicators and can be literate, it is just a matter of us figuring out how to set things up for them the right way.

[ZATTA] So, we have a little bit of time left if people have questions. Let me see some people already put some in. What about those who learn by smell?

[GONZALEZ] Hi. When we are thinking about standard forms of learning media, usually learning by smell isn't a primary way that people learn. I don't really know what else to say about that other than the fact that kids that seriously hearing impaired and also visually impaired -- that is kind of a totally different topic area and smell is important to everybody, but especially important to kids that have that dual sensory impairment or limited hearing and visual information. If you are thinking specifically about a kid that is hearing and visually impaired, there is kind of a whole different set of things there. But we can still talk about smell and should talk about smell a lot more than we do. The way that people are really gaining the most information is usually one of those three channels: visual, auditory, tactile. Hopefully that answered your question.

[ZATTA] Somebody else asked can you explain what you mean by environmental control units?

[GONZALEZ] Yes. Environmental control unit is the box. The most common one you see is either a box that is from the APH Sensory Learning Kit or one from AbleNet. It’s a box you can plug anything you would normally plugged into an outlet and they will turn on. So you plug something like a blender or you can plug a hairdryer into the box and use a switch to turn the things off and on. It is a common tool for people that have really limited motor skills so that they can have more control over their environment by using a switch to turn something on and off that normally you have to plug in. So that is a little more there.

[ZATTA] How do you decide that a child's cognitive abilities are sufficient enough that she can interpret or understand the picture symbol versus using a simple real photo?

[GONZALEZ] Generally you have to try different things and my lovely assistant here handed me an environmental control unit so I can show you. This is an environmental control unit. You plug applicable things in here and the switches plug in down here at the bottom so they can turn things on and off, which is pretty cool. Thank you.

So I generally -- when you are looking at is there cognitive abilities high enough for a symbol versus a photo, usually what I do if I am not sure is I will select two things - one is something I know the child hates and the other is something I know they love. I want to pick two things I am going to guarantee that they want to choose one, if they want to choose the preferred item over the non-preferred item. You might have these actual real objects and show them -- just be sure they are really always choosing the M&M instead of the book, for example. Once I know that there always going to want to choose the M&M and not the book, then I will create a set of photographs of different sizes and a set of line drawings of different sizes. I will show them two photographs and see if they still consistently choose the M&M instead of the book. Then I will try the line drawings that are three inches. Did they still choose M&M instead the book? When I see them only selecting the preferred item at 50% of the time, then you know that is random. There are only two items, so that is the stopping point and that is usually how I do that. I have a set of things that people usually want to ask for - a snack and they usually don't want to ask for a pencil, for example. I have a set of images I kind of use. I do that regularly as part of my functional vision assessment. You can do it anytime with the student.

[ZATTA] Let's see what other questions there are here. Do you have recommendations for a starting point for teaching auditory scanning?

[GONZALEZ] Yes. One would be to start out using auditory scanning with a step-by-step or the device I showed that I can’t think of the name of right now from Inclusive TLC. So, if you start with something where you only have one list that is a really simple way that a student can start to learn auditory scanning. If they are listening to the whole list and if they have some way to indicate yes, that is the item they wanted to choose from the list, if you are using a step-by-step like from AbleNet, you need to have two - one step-by-step that has the list and another device like a switch where they can say that is the one I want, which is why the new device from Inclusive TLC is so cool because it is both of the things in one device. Another way you can do for a starting point is to have some standard sets of things that the student usually needs to tell you, like something is wrong is one of them. Having a bunch of lists when something is wrong or how they are feeling. Are you feeling happy, excited, mad, sad, tired? If you pick some list they are going to use all the time and set them up, it might also be a list of activities they can choose from. You can actually do auditory scanning on any device at all, as long as the student is able to have some way to communicate yes and no.

If you have your own written list and redo the list, like let's say you want them to tell you how are you feeling today and you review the list - are you happy? Are you sad? Are you tired? Are you mad? Just watch for them to say no, no, yes. When they say yes, they have done auditory scanning. It’s actually called partner-assisted scanning and partner-assisted scanning is a really great way to start to introduce auditory scanning. The key with auditory scanning being successful at the initial stages is with not changing the list every single time. If I in my head think of a new list every time I ask them a question, and then they have to understand the parts of the list every time and it is different parts, it is a lot harder to learn to master auditory scanning.

If you use the same list every time, they know every time I ask you how are you feeling, you will name the exact same items in the exact same order, it is a lot more successful. Actually, I can show you guys, I have a book where I have set up some different things that kids commonly need. I have a page of records they might need - I have a page for things that are wrong, a page for I want to tell you something, a page for what I think, and the fact that I have the list that I am going to give written down means me and every single other person that does partner-assisted scanning can use the same list. Using the same list is really -- it really helps kids that struggle with auditory scanning to start to master auditory scanning. I would suggest that there.

[ZATTA] Let's see what other questions there are. What AT devices do you feel are appropriate for a young child with a visual impairment?

[GONZALEZ] That is something I can’t really answer in the two minutes we have left. I do have my e-mail address on the slide there, and if you have a specific question about that that you want to ask me, I would love to hear it. But, my answer is going to be way longer than I could give him the time we have. I will say that there are a lot of devices out there that are appropriate for kids that are visually impaired and they are starting to think about visual impairment a little more now when they are creating and programming devices. There are things that work, but really it is a matter of matching the visual communication and motor needs with the device itself. There is not really one I would just say is the best. It is really a matter of finding the right match with needs to device.

And looking at the Loc-Line, I’m not sure which kit has the appropriate mounting for the APH board. Possibly there is a kit used that is designed for an iPad that has two Loc-Line legs that come out, so that might be a good one. I've never tried to mount and APH board on Loc-Line so I haven't actually done that. I would suggest looking at the iPad mounting kit.

[ZATTA] Next question: do you think placing a picture of the actual item on a blackboard with the item in front of it is an appropriate method of offering a possible incidental learning opportunity by seeing the picture?

[GONZALEZ] Yes, it can be. Actually, sometimes for kids that are multiply and visually impaired, sometimes you actually need to teach that skill. Sometimes you actually need to have it be a task that you do where you show the student this is the object, this is the symbol, and work over time on way to match it. It's actually a skill you need to directly teach rather than having them do it naturally. I would say yes, that is a great way to look at incidental learning.

[ZATTA] Next question: over approximately 40% of multiply disabled students have visual issues. Does that mean we need to have more of our students evaluated by TVIs?

[GONZALEZ] I would say yes, the biggest yes ever. Actually the 40% was not -- the number of kids with multiple disabilities that are also visually impaired, actually that is a statistic is pretty hard to determine. There are some estimates that it is even up as high as 75%. The reason we don't have good statistics on that is because a lot of times kids that are visually impaired and their visual impairment gets missed. It is because we are a lot more concerned about the fact that they can't walk and can't swallow food. Obviously, those are more immediate concerns, but because of the way the vision loss impacts other learning, it is very important to make sure that more students are evaluated by TVIs. I find new ones all the time just from being in a classroom and I just happened to see somebody and I can tell that they are visually impaired but nobody has known it.

We are getting to the end of our time. I know there are more questions and I would love to answer them after we are finished. I think we need to stop the recording so I am going to let our host at Perkins do that for me and let me know if I can keep answering questions after.

[ZATTA] Thank you, Faye. Absolutely if the folks want to hang on for two extra minutes they can do so and Faye can respond to the questions. We have great questions; thank you all for your participation and thank you for a great presentation as well. Just a reminder: this event was recorded and will be available tomorrow on the Perkins website and also you will be receiving an e-mail with follow-up information as well. Thank you all and if you want to hang on, you have a couple more minutes?

[GONZALEZ]I do.

Answering questions; that would be great. Please continue.

[ZATTA] Wonderful. So the next question is I saw you work one time I have to tell you Mary King was the first person ever that told me about assistive technology. She is kind of like my mentor in this field. I learned so much from her so what do you think about taking advantage of motor memory for kids who need more vocabulary but visually can't handle the size of the display that has enough vocabulary?

[GONZALEZ] I can't tell you the number of times I've had this exact same conundrum. I have a student right now that accesses a device through eye gaze. She's very smart so she needs a large vocabulary, but the visual complexity of pages that have lots of symbols showing at one time is a challenge for her. I don't think there is one answer for the question other than to say that the fact that you are thinking about it is probably the first step and the important thing in figuring out the answer.

On this particular thing, I do have some students where the motor memory is more important to them, so you are able to have a screen that has smaller icons and the way you can hide and show icons – initially I might show only five or ten of the icons on the page, and you can slowly, over time, add show more of the icons so they are learning them slowly. Sometimes that works for students, sometimes it doesn't. Sometimes we have had to actually switch systems so we think, like a PRC device for example, is going to work and we find out in the end that everything displayed on the page it is really too complicated. Thinking about that is important when you are comparing, there is not a great answer for the kids that need large vocabularies that struggle with the visual access. Another thing sometimes you can do for kids that fall into this population is to use visual and auditory scanning. Sometimes if they need access to large amounts of vocabulary; if you set it up so they are an auditory scanner, even though they may be could access the screen physically, sometimes the auditory feature allows them to really access the vocabulary set that is more appropriate for their cognitive situation. You just kind of have to try one and see how it works. Try another and see how it works. That is kind of what you have to do. That is a great question.

I see a lot of people telling me this was a nice presentation; thank you. Just making sure I don't have any other question.

[ZATTA] I don't think you have any other questions, but lots of kudos and complements on a great presentation. I am going to second that. And thank you for your answers as well.

Unless there are any other questions I think we are going to go ahead and say goodbye to Faye, as well as thank her once again. So thank you all for joining us, we hope to see you again in the future. Bye now.