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Educational Considerations for the Clinical Audiologist, in partnership with Educational Audiology Association

Presenter: Monica Gallien, AuD

- [Christy] It is my pleasure to introduce our guest speaker today, Dr. Monica Gallien. This course is in partnership with the Educational Audiology Association. We'd like to thank Dr. Krista Yuskow, the 2023 EAA President, for coordinating this presentation with Dr. Gallien. If you'd like to learn more about EAA, you can visit their website at edaud.org. If you'd also like to learn more about today's presenter, Dr. Gallien, you can read about her course bio on the course registration page. But at this time, I'll hand the mic over to you, Dr. Gallien.

- All right, thank you so much for the introduction. I am so happy to be able to present on this topic that is very near and dear to my heart. Having worked as a clinical pediatric audiologist for the first nine years of my career, before transitioning to educational audiology, I can view my experiences as a clinical audiologist through my educational audiology lens. In my seven years working in the schools, in the educational audiology world, I have gained immense perspective and view my role as an audiologist very differently now. So I'm excited to share all of that with you today. Before we get started, I wanna thank Audiology Online and the Educational Audiology Association for all their support in bringing you this presentation today.

Here are my disclosures, and then we have the learning outcomes for today. At the end of the presentation, I really hope you're able to come away with some new perspectives and insight into the educational world that most of your pediatric patients are experiencing. You'll be able to identify two pathways for students to receive services, identify three assessments or tools that school teams use in evaluating students, and then you'll be able to describe pros and cons associated with three different remote microphones that we commonly use in schools. Classrooms today are not the classrooms of the past. When I first entered into the educational audiology world, I hadn't been in a classroom since I was a student. And, you know, they used to look like this picture, rows of desks and the teacher stood up front and basically lectured.

Classrooms today are fast-paced, they're dynamic, fluid, interactive, technologically advanced workspaces. Chalkboards are replaced with smart boards or projectors. Paper and pencil are replaced by Chromebooks and iPads. Lectures are replaced by group discussions. These new classrooms are exciting and engaging, and it's great, but unfortunately they're kind of inherently inhospitable for our children who are deaf or hard of hearing. According to the National Center for Education Statistics, in the 2020-2021 school year, only 1% of students receiving special ed services were identified as having an eligibility of deaf or hard of hearing. So that kind of goes along with what we know about the incidence of hearing loss in children, but it's such a small percentage of students in schools today.

And in the '21-'22 school year, an average of 14.7% of students enrolled in public school in the United States were served under the Individuals with Disabilities Education Act, or we know it as IDEA or I-D-E-A. Imagine a district with 50,000 students. That's a really big school district. If we do the math, we see that out of all of those 50,000 students, based on the statistics I just read, only about 73 of those students will be receiving special education services under an eligibility of deaf or hard of hearing. So naturally, district leaders, administrators, teachers, and staff are understandably not often experts in dealing with children who are deaf or hard of hearing because it is just such a low incidence population for them.

If that district doesn't have an educational audiologist on staff, or maybe just a part-time teacher of the deaf or hard of hearing, they'll often be looking to the clinical audiologist for guidance. And that happens more often than I would like to admit. Everyone knows, we hear about it all the time, there are teacher shortages. It's rampant across the country. And that goes just as well for teachers of the deaf. I live in Indiana, and we have a significant lack of teachers of the deaf in our state. Not just that, but because it's such a low incidence population, often if the district, maybe a rural school

district, think of that small school district that maybe only has a handful of children who have a deaf or hard of hearing eligibility, that rural school district can't afford to employ a full-time teacher of the deaf.

So maybe they have trouble finding someone just to work that small part-time position. So it's a real problem that we're lacking teachers in schools today, especially for our deaf and hard of hearing children. We also have a lack of educational audiology services, and, you know, really that is worse or better regionally depending on where you live. As part of the Educational Audiology Association, they have a great listserv of educational audiologists from across the country. And it's so interesting to hear how one state, they may have plentiful educational audiology services and they can't understand how some states operate, you know, without such great support from educational audiologists. In my state of Indiana, there's only a handful of us working in schools on a regular basis.

So it can be a real problem providing services, you know, from knowledgeable staff members for these students, depending on location. Also, when we look at scopes of practice and responsibilities of teachers of the deaf versus educational audiologists, if one is missing, the other is often asked to fill in or step up and, you know, provide that support that the other profession should be providing. And, you know, I've met some great teachers of the deaf over the years who know a ton about equipment and can interpret an audiogram fairly well, but they aren't trained, you know, to provide those services to these students. Just like as an educational audiologist, I'm not trained to provide academic support for these students.

So what happens when there's no educational audiologist available? The teacher of the deaf or hard of hearing often gets roped in. If it's not someone who has a great knowledge of equipment and hearing loss and all of that, who are they gonna rely on for support for these students? It will fall on the clinical audiologist. So as such, it

would be great if we could keep our clinical audiologists up to date on the status of schools, open that line of communication. And so that's what we're here to talk about today. I have seen each of these professionals I have listed on the left hand of this slide, classroom teachers, SLPs, interpreters, classroom aides, school nurses, all being asked to assist with all the tasks you see on the right side of the slide, and many other things for their students who are deaf or hard of hearing.

As clinical audiologists, we generally do a great job of training our patients and their parents or guardians on all the things related to their hearing device. We make sure that they know before they leave the office how to put it on and take it off, how to change or charge the battery, how to clean the device and maintain it, and all of those other things that we work on with them. But then we send those patients out into a world where they will typically be spending a lot of time with adults who are not their parents at school, at daycare, preschool classrooms, extracurricular activities. So these professionals that are, you know, being asked to fill these needs for this child are often untrained, at least not formally, in the care and function of all the different hearing devices with all the different options that any given student may show up using.

So these school staff members, I've never seen anyone unwilling to do whatever they need to do to help these students, but they require training and they require information in order to be able to provide assistance to that student when it's needed. In the absence of an educational audiologist, the clinical audiologist becomes the key source of information and support for that child's school team. So it's imperative that clinical audiologists have a broader, deeper understanding of what's happening in the patient's school, special education law, the process, the school environment, all of these things in order to ensure the best outcomes. So we all likely learned about all of this either in our undergraduate or graduate programs. For those of us that don't work in a school environment, the lines separating the specifics of ADA versus IDEA, or 504 versus IEP, it's probably all begun to get a little blurry around the edges over the years.

Having a clear picture of these laws and plans is crucial for anyone working with deaf and hard of hearing children. So, as a quick refresher, the Americans with Disabilities Act prohibits discrimination based on a person's disability. As that relates specifically to schools, a child with a disability must have access to the school environment and the curriculum that is equal to that of their peers without disabilities. So that's what ADA is about. For children who are deaf or hard of hearing, that may look like accommodations to the environment, such as use of assistive technology or our favorite school buzzword, preferential seating. ADA does not account for special education services, so that's where IDEA comes in. It's a law that ensures a free and appropriate public education, we may have heard that referred to as FAPE, for all children with eligible disabilities.

IDEA encompasses special education and learning needs of the student in addition to all those considerations regarding equal access to the school environment. So based on those two laws, there are basically two types of plans that can be implemented to support a student who is deaf or hard of hearing in school. As a side note, they are not mutually exclusive, and a student can certainly have both types of plans in place at the same time. Although in my experience that's not super common, but it is certainly possible, especially if other disabilities are at play as well as the child being deaf or hard of hearing. They could definitely have both of those plans in place. But the primary distinction between the two types of plans, as I just said, involves the provision of special education services, goals, accommodations.

Whereas a 504 plan typically just provides only for those accommodations to the environment. So examples of items that might be included in a 504 plan would be use of remote microphone technology or hearing assistive technology, preferential seating, closed captioning, et cetera. So those are all accommodations that require a modification or something being added to the environment. IEPs are able to include

services from special education staff and are developed by a committee to include annual goals, accommodations, and also provide specifics regarding how much time the student is receiving those services. So then the school is held accountable to meet those goals, not necessarily meet the goals, but make sure they're intervening with that student at the amount of time they provided for in the IEP.

That committee generally includes school staff, so typically like a special education teacher, DHH teacher, administrators, related service personnel, so staff members like occupational therapists, physical therapists, audiologists, fall into that related service category, as well as obviously the parents or guardians of the child, and then any advocates that the parents or guardians may request to be present on the committee. So an example of a 504 plan might be a student who is independent with the care and maintenance of their hearing devices, is successful academically, advocates for themselves appropriately when necessary, but maybe just requires documented allowances for things like preferential seating or other accommodations. A student who would likely benefit from an IEP over a 504 plan would be a student who maybe has a newly diagnosed hearing loss, maybe is struggling in one or more academic areas, needs help learning to advocate for themselves in regards to their hearing or communication needs.

So an IEP generally, I used to think of it as, you know, special education services, meaning the special education teacher is going to modify their curriculum, or there's gonna be some sort of academic involvement. I've seen plenty of IEPs where the only goal is a self-advocacy goal, because that's part of school just as much as learning reading and writing is for these students. They need to learn to be able to advocate for their needs as a child who's deaf or hard of hearing. So in that case, the IEP committee can write and implement specific goals related to whatever areas of need were identified for that student to work on throughout the year in order to further develop those skills.

So you can see how a situation where an educational audiologist is not available, the input of the clinical audiologist might be critical in the process of discerning which plan might be best for a particular student, or what goal might be the best type of goal to work on for that student. And so with that being said, there are some common myths that I've encountered related to the IEP and 504 process or school services that I think it would be beneficial to clear up in case you ever do fall into that situation where your input is really needed in order to determine the best path forward for one of your patients. So myth number one, when a child is referred for special education services and has specific accommodations or recommendations from a medical professional, the school is required to automatically accept and implement any and all recommendations.

This is a big one that I run into, and I feel it's really important to highlight when that recommendation comes into a school, what has to happen before the school can actually implement those recommendations. So while school personnel obviously welcome all of those suggestions and recommendations and information from medical professionals, they have standards and processes that they have to adhere to before implementing any of that. So many parents and medical professionals, and I include myself in this category before I came to work in a school setting, are under the impression that a note that says like, "FM system" from an ENT, for example, should automatically entitle that student to that service or accommodation. Now, under ADA or a 504 plan, a child with a documented hearing loss is absolutely entitled to necessary accommodations in their classroom, and there aren't as many hoops to jump through to get that 504 plan.

So that would be the fastest pathway for that recommendation from the medical professional to be put into place. But even that, every school district has a process that has to be followed in order to put that plan into place. And they have to have a meeting

where school staff and family members can agree, go over the diagnosis, and really document all of those accommodations they're going to put in place. However, if it's a child that needs an IEP, the process is much more cumbersome. It requires a full educational evaluation, usually involving an evaluation by a school psychologist. With a newly identified hearing loss, it would for sure include a speech language pathologist, the teacher of the deaf or hard of hearing, hopefully an educational audiologist as well, and any other professionals depending on any other areas of need for that student.

So by law, according to IDEA, the school is allowed 60 school days to complete that full evaluation in order to determine those services and accommodations. Although I will say I live in Indiana, some states do shorten that timeframe. So in Indiana, our state law limits the evaluation period to 50 school days, so a little bit shorter but still a really good amount of time if you think that's 10 school weeks, if we're counting five school days per week. So it's a good amount of time to allow for that full evaluation to happen. But within that window, schools have to evaluate the student and then also convene an initial IEP meeting where they'll discuss the results of the evaluation and then, if necessary, develop the IEP with the entire committee present.

So myth number two, thanks to Bluetooth technology, it doesn't really matter which hearing aid I choose for my pediatric patient because every manufacturer has a remote microphone available. All remote microphones are not created equal. Some devices are designed specifically for educational use, whereas others were designed for personal use or home use or the listening needs of adults. Microphones and transmitters intended for school use may have additional features that are super useful in a classroom, such as adaptive gain adjustments and auxiliary input for direct connection to tablets and computers, which is so important in today's classroom environment. Some transmitters can be networked together so that students can access both the classroom teacher's voice and, for example, if it's like a co-taught class, they could

have access to both teachers, or if there's a one-on-one aide in the situation, the aide could also have a microphone with equal mixing at the same time.

Most proprietary Bluetooth based remote microphones don't have that capability. Universal connectivity of remote microphone technology is often extremely important to school districts for financial reasons. They are operating on ever increasingly stretched budgets, so if they can buy one piece of equipment that will work for this student now, and then let's say that student moves away and another student moves in and it's a universal device that can also be used with this new student, it just makes that work so much better for the school districts. So consider whether a certain make or model that you might be recommending will require the student to wear maybe a neck loop telecoil receiver in order to access the assistive technology.

If that's the only way that the make and model you're recommending would be able to access hearing assistive technology in school, consider if, you know, let's say it's a 14-year-old boy that you're making this recommendation for, will they be willing to wear something around their neck all day in order to access that technology? So just lots of things to consider there. Excuse me. I have three of the most common classroom transmitters that I work with, and certainly there are a plethora of choices when it comes to remote microphones, especially when we get into proprietary remote microphones. But as far as classrooms go, these would be the three most common that I generally see. And I don't have any data on this, but I'd be willing to guess that these are probably somewhere in the top five transmitters used across the country.

We have the Phonak Roger Touchscreen mic, which is a transmitter for the universal Roger system. We have the Oticon EduMic, which is Oticon's proprietary DM transmitter, but it was designed specifically for schools for use with Oticon hearing aids, and the newest Oticon Medical Ponto device is also compatible with that microphone. And we have the Cochlear MiniMic 2+, which is Cochlear's remote

microphone designed for use with their cochlear implants, their Osia devices, and the Baha 6 Max devices. So when we compare these three microphones, there's three main factors that I listed here. And the first is automatic connection. So once they're paired or once everything is set up, does the child's hearing device automatically connect with the transmitter or microphone?

And we get green stars for Phonak Roger Touchscreen and Oticon EduMic here. The Cochlear MiniMic 2+, it's not an automatic connection because the child's personal device does have to be placed into streaming mode in order to access the sound from the microphone. So they are always paired, but the real consideration there is that need to place the device into streaming mode, either using the button on the device or a remote control, or with some versions of their devices you could use the app to do that, but it does require that step in order to have the microphone's signal received by the child's hearing device. Then we have the networking option that I mentioned previously as far as which ones are able to use multiple microphones transmitting to the same student.

And that feature is only available with the Phonak Roger system, not just the Touchscreen, but any of their educational portfolio transmitters are able to be networked to some extent. I'm not gonna pretend that this is a presentation to give you all the specifics about the microphones, just generalities that I want you to think about when you're making your recommendations for children. And then requiring an external receiver or additional receiver in order to connect to the microphone. Phonak is the only one of these three that requires an extra piece in order to make that connection between the personal hearing device and the transmitter. So with the Oticon EduMic and the Cochlear MiniMic 2+, nothing additional is needed beyond the child's personal hearing device and the microphone or transmitter.

With Phonak, you do need to purchase the additional receiver for that. So myth number three, if the school needs audiology records, the educational audiologist will obtain a signed release and request those records from the managing audiology clinic. We are all strapped for time in all ways, and so I understand the time constraints and demands put on clinical audiologists today. But as we've established already, many school districts do not have access to an educational audiologist. Teachers of the deaf or hard of hearing may not have contact information for a student's clinical audiologist. I can't tell you, it's embarrassing, how many times a parent or a student, I've asked them where they go for their clinical audiology services, and they don't know, or they don't have the contact information, or they don't know who they see.

It gets very blurry for families, sometimes. It can often be difficult for school personnel to get in direct contact with parents as well in order to get them to sign a release form. In this world of Zoom meetings and virtual case conferences, often parents are never even in person at the school in order to physically sign the document, so then we get into the logistics of virtual signing and all of that. So the best way, I think, to grease the wheels of communication would be for the clinical audiologist to have the parents sign a release of information form for the school at the time of the appointment. But don't stop there. The school may not be aware you have a signed release, so they don't know they can ask for the records.

But once you have that release, send the information to the child's school. Now, I'll also give you that when I was working as a clinical audiologist, oftentimes parents didn't know the name of their child's teacher, certainly not their teacher of the deaf or teacher of record. Sometimes they didn't even know the classroom teacher's name. But if you have the name of the school, you could send it to the special education administration department of the school district, and then it would certainly get into the right hands. You could send it to the school to the attention of the teacher of that

student. So any way to just kind of get that line of communication open I think is gonna only better support these students.

Myth number four, rechargeable hearing aids are better for everyone. And I know there are plenty of mixed reviews on this. I'm actually team rechargeable. If I were gonna get a hearing aid, I would probably get a rechargeable hearing aid at this time. But I cannot tell you how many times I've been called to a school because a student has shown up with a hearing aid that is not charged, whether it's because of user error, a broken charger, they just forgot to charge them. Sometimes we don't know why, but it's a huge problem when that student shows up for school with hearing aids that are dead. Sometimes parents won't even send the hearing aid to school because it didn't get charged the night before, so they don't see a reason to send it to school.

Now, of course there are resolutions to this problem, and I often do suggest that my school districts purchase chargers to have on hand, but, you know, I'm just thinking of one manufacturer and there's like three different versions of a charger depending on which model of hearing aid the child has. And, you know, it's difficult for schools to know and to be able to maintain that many chargers, so it can be a real problem. Just something to consider. Is this a responsible family that you think will be able to support consistent nightly charging of the hearing aids? You know, take that into consideration when you're either suggesting or not suggesting rechargeable hearing aids. Are they capable of monitoring whether the charger is working properly and then troubleshooting it if necessary?

I mean, it's just really difficult when these kids come to school and they have nothing. I try to encourage my districts to purchase loaner hearing aids just to have on hand for situations like that. And again, every state being a little bit different, there are some schools that have school hearing aids. There are states where they just purchase hearing aids for kids to wear at school, and that's so amazing, but it's not the reality

everywhere. So just kind of keep that in mind. Some other considerations. So not necessarily myths, but just things to consider that maybe I as a clinical audiologist hadn't considered and now I wish I had looking back. Don't just consider connectivity and compatibility, kind of those buzzwords, but consider how easy it is to connect and how easy the compatibility is for these students and what their situation might be like.

As clinical audiologists, there are obviously many factors that contribute to your recommendation of a specific make or model. Patient preference, big one. Power level, technology level, colors available. Sometimes that does change what we're recommending if a kid has to have a certain color. Age of the child, compatibility, connectivity options. So many more things. In addition to all of that, clinical audiologists also have to work within certain parameters, such as insurance factors, manufacturer contracts, pricing paradigms. I get all of that. And some of those things can't be avoided or ignored when determining the best make and model for a particular patient. However, there may be some additional factors worth considering when fitting school-aged children. So it would be rare to find a new device that does not have some level of Bluetooth or remote microphone compatibility.

So let's consider beyond those generalities of it's got connectivity or it's compatible with a remote microphone. Let's go past that. Is the technology easy for a student of that age to access? Does the student, or maybe the classroom teacher if the student is too young or physically unable to do it, need to press a button or activate a program via remote control in order to connect to classroom equipment? Remember that although they should receive training from the teacher of the deaf or the educational audiologist, often classroom teachers or aides will be that first line of defense. They'll be the ones helping the student on a daily basis to connect. So if it's really cumbersome or difficult to connect to the remote microphone technology, sometimes it doesn't happen, and that's a problem for our students.

So we need to also consider inter-device compatibility. Situations where this consideration applies are scenarios in which a different device is being fit on each ear. So like bimodal solutions where a cochlear implant or bone conduction device will be worn on one ear, and a traditional hearing aid will be worn on the other, or something else like that. It's important in these situations to consider how the child will access classroom equipment from each device. If and when possible, it's important to ensure that both devices are compatible with the same classroom technology. So I was recently speaking with an educational audiology colleague, and she posed the following situation to me. She had a student with a Cochlear Baha on one ear and a newer Oticon BTE hearing aid on the other.

So from a clinical standpoint, the Baha may have been preferred by the surgeon, I don't know, or the audiologist over Oticon Medical Ponto. I don't know which device the student had first, whether the Oticon came first or the Cochlear Baha. But an Oticon hearing aid may have been the best or only choice based on factors related to the student's insurance or previous hearing aid use. But from an educational audiology standpoint, if we want this child to have binaural presentation of a HAT signal, it's complicated, so I'm gonna break it down for you. So here's the child with the Oticon BTE on the right ear, the Cochlear Baha on the left ear. So with the Oticon EduMic, the only way that this rechargeable Oticon BTE model can access HAT is through the EduMic.

The only way the Cochlear Baha device can access HAT is through the Cochlear MiniMic 2+. Neither of these devices has a T-coil option included, so even use of a neck loop receiver is out. Therefore, in order for the student to have binaural input of a HAT signal, we can, number one, attach a universal receiver such as the Phonak Roger X to the EduMic, and a Phonak Roger X to the MiniMic, and have the teacher wear one Phonak transmitter. But in this scenario, the Baha still needs to be put into streaming mode at the beginning of the day, and then again any time the student is separated

from the MiniMic 2+ for more than five minutes. The student also has to tolerate wearing both the EduMic and the MiniMic 2+ as streamers all day.

So this is probably not a viable option. The second option would be to have the teacher wear both the EduMic and the MiniMic 2+ at the same time, ensuring both microphones are connected to each device, worn at the correct distance from their mouth all day. They have to remember to mute each microphone individually every time they need to mute, and they need to prevent the microphones from bumping into each other all day, creating that sound going into the student's devices. This is a huge task. So alternatively, a third option would be that we forego all of that other stuff and we just put a soundfield system in the classroom. This would make everyone's lives much easier, but research studies have shown this type of system is less beneficial for deaf and hard of hearing students compared to ear level options.

So another consideration is how will this student access sound from a computer or a tablet? And we all like to say, "Oh, you've got Bluetooth. You can just Bluetooth to the device and it'll stream to your hearing device," but will it do it to both at the same time if they're different manufacturers? Also Chromebooks, which are very common in schools, are notoriously bad at maintaining Bluetooth connections with hearing aids. So it's a real problem. In either scenario one or two, the student would need to plug each microphone into a splitter cable attached to their computer or tablet, and it just gets really cumbersome. So it's just something to think about. And this is a rare scenario, but I highlight it because it is so cumbersome and listening in schools is such an important part of this child's day and listening tasks that to have it be so complicated maybe didn't need to happen if we had considered that when deciding on one or the other hearing device.

Consideration number three, there may be a classroom solution you haven't considered. This is a big one. In my years as a clinical audiologist, I didn't fully

understand all of the options and everything that went into deciding on classroom technology for a student. As an educational audiologist, I've many times made a recommendation only to discover later that a different solution is actually better for that student or more appropriate for the situation. Similarly, if a trusted clinical audiologist tells the family that a specific classroom solution should be used, an expectation has then been set with the family that that solution must be the best because their clinical audiologist who they trust and appreciate has recommended that. So what if the school team then after completing an evaluation or meeting with the student and talking with the teachers, or after completing a functional listening evaluation, then recommends a different solution?

This can become a source of conflict or unnecessary lack of trust between the parents and the school staff. Of course there will be times that a school district requests a specific recommendation from the clinical audiologist, let's say those cases where a teacher of the deaf or an educational audiologist isn't available and the school staff is looking to the clinical audiologist for that information. Of course, yes. Then in that case, I love that that relationship exists and that the clinical audiologist can share that information. But as a general rule, I think that rather than recommending a specific make or model for use in the classroom, it would be better to recommend that the school team consider or evaluate for the need for hearing assistive technology so that then they as a case conference or IEP committee can go ahead and make that determination.

So when we evaluate a student's needs from a deaf or hard of hearing standpoint, there are these four kind of categories of things that we look at. The SETT framework was described by Joy Zabala in 2005 to assist educational teams in determining the best tools and technologies for each individual student. So we go through the acronym SETT, we look at the student's characteristics, so hearing loss, academic success, kind of age, what devices they have, all those things specific to that student. Then we look

at the environment that the student has to learn in. So are they in a preschool class? Are they in a life skills class? Are they in gen ed? Are they old enough that they switch classrooms throughout the day?

And then we look at tasks required. So what is that student being asked to do in those environments every day? And then finally, we determine the tools necessary to enable the student that we've listed those characteristics of to participate in those environments and complete those tasks. And I've seen districts use this very informally. Online, there are great resources like tables and flow charts to help you move through that framework. And it's not just specific for deaf and hard of hearing. It's great for all assistive technology needs in schools. Then we look at classroom observation. So at a minimum, we want a classroom observation to include a physical description of the classroom. So are there concrete walls?

Are there fabric covered walls? Is there a wall of windows? Are there lots of reverberant surfaces, et cetera? We look at an environmental description. So like how many students are in the classroom? Are there significant noise sources? Where is the student located in the classroom? Technology in use, not just hearing technology, but what is the teacher using? What is the student using to access the curriculum? And then teaching strategies or characteristics observed. So things like, does the teacher face the students? Do they walk around the classroom while they're lecturing? Do they provide a lot of visuals? And then we look at the student characteristics in the classroom. Do they watch the teacher? Do they raise their hand to answer questions?

Are they looking at all the other students around them to know what they're supposed to do? So we just kind of wanna document all of that. Then we look at functional listening evaluations. As a clinical audiologist, I didn't know anything about functional listening evaluations, and now it's one of the most important things that I provide, a service that I provide, as an educational audiologist. It's so helpful to the team in

determining next steps for a student, or, you know, just providing data to help make decisions. Excuse me. It's in general an evaluation used to assess a child's performance over a variety of listening conditions that we're trying to mimic a classroom environment. So we manipulate different factors like distance between the speaker and the student, background noise, and then whether or not the student can see our face.

There is a formal test battery called the Recorded Functional Listening Evaluation, and I have the website listed there. It's Karen Anderson's website, which if you don't know, that website is an amazing resource, not just for a functional listening evaluation, but for all things school related as far as deaf and hard of hearing children. But there is a formal test battery available on there with recorded materials and an interpretation matrix and all of that, so it's a great resource. I typically use a more modified or informal functional listening eval because generally I'm looking for a more specific answer depending on the question of why I am doing the functional listening evaluation. Maybe I don't need to do all of the different conditions in the formal test battery, and I only need to compare a couple of different variables to get the answer I'm needing.

Sometimes I also will do a recorded voice versus my live voice. Think about standardized testing in particular for our students. There's a lot that students are learning and being tested on through the computer, and we know that recorded speech is often significantly more difficult for deaf and hard of hearing students to understand. So when I do a functional listening eval comparing recorded voice to live voice, I can actually provide data to the IEP committee saying, "Look, they actually do just as well hearing recorded voice versus live voice according to this test," which can then inform those decisions. Do we need to have a live reader for test materials for the student? Or are they okay listening to that recorded voice if we provide captions?

Excuse me. Not so much anymore, but during the COVID pandemic, we had a lot of questions about whether clear masks were better for students, or surgical cloth masks were better for students to be able to understand what was being said. And I had a lot of parents asking for clear masks. And, you know, it was starting to come to our attention, it came a little too slow from when kids started back to school, but then eventually we started hearing, "Oh, maybe clear masks aren't the answer." So I was able to provide data, how well does that student hear when the speaker is using a clear mask or the clear panel mask versus a cloth or a surgical mask?

And then also we can compare different HAT configurations. So we can compare how a student does in background noise with a soundfield system versus an ear level system if we need data to support one of those decisions. What they are not, functional listening evals are not speech and noise testing. It sounds very familiar. We often will use similar stimuli. So if it's language appropriate for a student, I will often use the hint sentences in a functional listening evaluation. But there are some significant differences, the most obvious being location of the testing. So speech and noise testing is usually done in a sound booth and it's calibrated and there's a stable, predictable signal to noise ratio because you're in charge of that.

And then obviously standardized materials and your scores are standardized. With functional listening evaluations, the benefit, even though it's a big difference, is that we're not in a sound booth. We are in potentially the student's own classroom. While the class is out maybe at gym or music or somewhere else, we are in that student's classroom or a similar room to their classroom, and we can use the actual assistive technology devices, but it isn't calibrated. But I find in general, it gives us just as valuable information, especially looking at that child's classroom situation. So I have an example just to kind of give you a real world scenario here of a report form that I had completed. This was a fourth grade student who used a Cochlear Osia device for single-sided deafness.

So she has one normal ear, and so her school team thought she would be fine. She has one normal ear, the teacher stands close to the student, so they thought she would be fine. The parents requested some additional evaluation. So I did four different conditions here, and you look at condition one, there was background noise present. The student could see my face as I gave her the sentences and asked her to repeat them. And I was six feet away from her at the time. So I like to report not just the word score, but also the sentence score. So how many sentences did she miss at least one word in? And then what was the percentage of words that she got correct as well?

So as you go down through the conditions, you can basically see, if we look at conditions three and four compared to conditions one and two, so in three or four I was sitting right next to her, and in one and two I was six feet away from her, which I would think when a teacher tells me, "Oh, I stand close to the student all the time," I would think we're talking about within six feet. So you can see the difference in her scores when that signal noise ratio became much more beneficial because I was sitting next to her versus just six feet away from her. She performed much better. So this gave us the data that we needed to show that school staff that a remote microphone would be super beneficial for her because it would provide that change of distance without the teacher having to sit right next to her.

We also use questionnaires and inventories to evaluate students. The PEACH, the TEACH, the SIFTER, which has a preschool and secondary version. The Vanderbilt Listening Fatigue Scales can be super helpful in kind of defending the need for additional accommodations or technology. And then the LIFE-R is also a great resource. The SEAM for School Success, if you haven't looked at that, it's a great resource for kind of where we expect a student to be with their independence with their hearing technology based on like grade level. So really helpful questionnaires and

inventories there when we're evaluating students. So I have a few case examples that I'd like to go over real quickly before we get to some questions.

The first case was a 10-year-old student with single-sided deafness in the left ear, and he had a very significant visual impairment. So he used a Cochlear Baha 6 Max on a SoundArc. And because of his visual impairment, he did have a one-on-one classroom aide, so it was one person that was with him all through his school day. So she helped him with all things, interpreting, you know, she made accessible what the teacher was saying, she helped him carry his things from classroom to classroom. So what do we need to consider about his classroom environment when we are looking at technology options for him? So in his environment, he needs to be able to hear the classroom teacher, but also the aide at his side.

And there's a regular, you know, gen ed classroom of students in here, so that aide isn't gonna wanna be speaking, you know, at an elevated level, she's gonna wanna be a little quieter. So it may be difficult for him to hear her, especially if there's background noise. He does move between different classrooms throughout the day. He goes to the resource room at times throughout his school day. So he is on the move. And then he has a lot of devices that he already uses. So he has a magnifier so he can better see pages that are passed out. He has a braille writer, he has his cane, he has a Chromebook he has to keep track of.

So he's already got a lot to be juggling, so we don't necessarily wanna add too much to that, so that's also a consideration. So we've thought about the environment and then now we need to think about what are our options, what are those tools that we can offer? The most obvious choice here would be the Cochlear MiniMic 2+, because it pairs straight to the Baha, which he already has. It's just one small microphone, so not a lot of extra stuff to carry around, and there's no need for a receiver, so nothing we

need to plug on or wear or anything like that. So those are the benefits of that. There were some cons and we knew those upfront.

The first is that there's no ability to network additional microphones, so we were gonna have to choose, is the classroom aide gonna wear the mic or is the classroom teacher gonna wear the mic? And it's also difficult for a lot of students, but especially this student, to be able to independently put his Baha into streaming mode. So these were the things we were considering, but we thought, you know, it's the most streamlined option, let's go ahead and start there. So we did choose that and it failed. It was sort of a disaster. We decided the classroom teacher needed to wear the microphone because she's providing that curriculum information. He couldn't hear the aide because his primary stimulus was coming from that microphone from the classroom teacher.

When we switched and we thought, "Okay, well, we'll just put the microphone on the aide and she can relay all the information," she's not able to do that at a speed she needed to be able to in order for him to get all the curriculum as well as, you know, keep up with what she's helping him with. So our next option that we came up with was this. We decided to try a Phonak Roger Focus, which is the ear level receiver, on his good ear, and give the teacher and the aide both a Roger Touchscreen Mic so they could be networked together. He's getting their voices both equally mixed into his good ear. And he can still wear his Baha for sound awareness and to hear his friends on that side.

So that was really the better solution for this student. One more case example I'll run through real quickly before questions is a three-year-old girl transitioning into preschool. She had mild to moderate sensory neural hearing loss and bilateral Oticon Play PX. So the case conference committee looks at me and says, "What are our options?" Well, we have lots of options, but let's figure out which one the best is. If we look at the soundfield system, it's really difficult to capture everything that needs to be

captured in a preschool classroom when only one person is wearing a microphone and it goes through the soundfield system. So we got rid of that one pretty quickly. We looked at the EduMic.

That's a seamless sort of option for her. We don't need to plug anything onto her hearing aids. But we can't network, and we know this girl's gonna have several different aides and teachers and related service providers in there, so we wanted the opportunity to network microphones if we need to. So that gives us option three and four where we can use the Phonak Roger Touchscreen with the Roger X. The nice thing about these two options is there's one option for her because her hearing aid is not rechargeable to plug on an audio shoe with the Roger X, and then that does create a difficulty of having to change that battery because of the tamper proof tool necessary to do that on such a young child.

And then we could also plug a Roger X receiver into the EduMic and use that as a streamer. After much discussion, the team decided on option three, so that we have that option to network those microphones if necessary. So in summary, it's really important to stay up to date on everything going on in schools, even if you're not working directly in schools. You can get information from the EAA website, which has some great resources about schools, what's happening in schools, educational audiology. There's also continuing education opportunities like this one through Audiology Online, but also EAA has some great continuing ed opportunities as well. Arm parents with information. If you don't know the Wrightslaw website, it's got great information about advocating for students.

And then let's collaborate, communicate with your school team. It's only gonna make things better for these students. So I know we only have a few minutes left, but I would definitely be open to answering any questions if we've had anything come up.

- [Christy] Thank you so much, Dr. Gallien. We're gonna go ahead and open up the floor for any comments or questions. We do have a few in the queue here, and we'll go through them. The very first question here, this is from earlier on in the presentation, the attendee asked, "Is it the parent's responsibility to contact the school for 504 or IEP evaluation?"

- So it can go either way. I've seen it where recommendations have been made by the school, where the school has found out about a hearing loss, and so then we've reached out to the parents, and not necessarily specifically for a 504, but just to make sure that the family is aware of the options for their student. And sometimes families are like, "He's fine, he's doing great. We don't have any questions. We don't need to go there." It can also come from the clinical audiologist can refer to the school and suggest a 504. And in that case, we would begin that process and reach out to the family and just to discuss those options. So it can come from the parents, but it can also come from other professionals.

- [Christy] Thank you, Dr. Gallien. We have time for one more. I know there are so many comments just thanking Dr. Gallien for an excellent presentation, and so thank you for those very kind comments. We have questions here. Let's see. This is just a comment here, Dr. Gallien. "If a student lives in a place with inclement weather and the manufacturer doesn't offer chargers with stored batteries and the power goes out, this is where standard batteries might be advantageous."

- Definitely, it's one more of those considerations. You know, questions to ask yourself before recommending rechargeables for a student would be, do they live in a rural area that loses power a lot? I have told families, and I'm sure you guys have too, that, you know, those USB plugs can plug into your car too, so you can always charge 'em for

30 minutes on the way to school if necessary. But it is, it can be a real problem for these students in school. And I'm sorry that we're limited on time here, but I am happy, if you have any questions that didn't get answered, my email address is there on the last slide. I am happy to answer any additional questions.

- [Christy] And we could probably take one more here, Dr. Gallien. We have one from Jung Hae. Jung Hae asked, "Do you recommend the use of FM when an SLP works one-on-one with a student in a small space?"

- That's a really great question, and I'm not gonna give you an easy answer. I would say it depends on the student, the device, and where they're at in their speech and language proficiency. So, for example, I've had students with cochlear implants who are really, we're working on like oral habilitation at that point, and really trying to target and get that signal into their device as clearly as we can. And so in those cases, I have definitely recommended that the SLP wear the device, even if they're one-on-one right in front of them in a quiet room just to get that much more stimulus in there. But really other than that, I would say it's sort of a case by case basis.

If they are doing a group session with an SLP, even if the room is quiet and they're in close quarters to each other, I would still recommend using the remote mic in that situation. And the bonus of that Phonak Roger Touchscreen Mic is you can put it flat on the table and it becomes conference, it moves into conference mode, so they'll also be able to hear the responses of their fellow students in that group therapy situation.

- [Christy] Thank you for your answer, Dr. Gallien. And this is just a shout out from attendee Haley. Haley said she used to work at the Indiana School for the Deaf.

- Oh, local. That's great.

- [Christy] All right, well, everyone, thank you so much for joining us today on Audiology Online, and we do appreciate EAA and Dr. Krista Yuskow for coordinating this presentation. Thank you to Dr. Monica Gallien for her time and her expertise. We hope you enjoyed today's presentation and can walk away with some clinical tools. We hope that you can join us next time on Audiology Online. Have a great day.