

Details

Why Audio Quality Matters and How to Improve It - Bonus Episode with Lightspeed

In this episode, I chat with Tony Zeikle, Senior Vice President of Revenue at Lightspeed, who shares a powerful message on how audio quality in the classroom connects to equitable access and school safety. You'll also hear tips for addressing common acoustic problems in classrooms, how optimized instructional acoustics can improve student outcomes and engagement, and more!

Show notes: <https://classtechtips.com/2023/10/06/audio-quality-bonus/>

Introduction

Hello there and welcome to today's episode of the Easy EdTech Podcast! If we haven't met before, my name is Monica Burns. I'm a former NYC public school teacher and I've been out of the classroom for a few years leading professional development for teachers, and writing about all things EdTech on my blog [ClassTechTips.com](https://classtechtips.com)

You might be used to joining me on Tuesdays for new episodes of the podcast, and today is a special bonus episode in partnership with Lightspeed. I'm excited to bring you another special bonus episode on a Friday.

Before we jump into today's episode, a quick reminder — you can head to my website classtechtips.com/podcast for all of the show notes and resources from today's episode, and if you're listening to this episode on a podcast player like Apple Podcasts, Spotify, or Google Podcasts, you should see a link in the description that you can click on as you listen today and it will take you to all of the resources I mention.

Promotion/Reminder

This episode is sponsored by Lightspeed. Lightspeed, the provider of instructional audio solutions that create equal access to learning, is on a mission to help every student hear every word.

Today's Intro

Today's episode is titled "Why Audio Quality Matters and How to Improve It" and I chat with Tony Zeikle, Senior Vice President of Revenue at Lightspeed. Now we talk today about audio, what it means to keep this in mind when you are instructing students, making a plan or safety plan in your school or district. There's a lot of great tips and information that you might have experienced before but maybe never named in the way that you'll hear Tony

share today some really great vocabulary around this idea of instructional audio quality. Let's dive into the conversation!

Episode Transcript

Monica Burns:

<Silence> Welcome to the podcast, Tony. I am so excited to chat with you today about audio quality and why it's so important, why it matters in every classroom. But before we jump in, would love for listeners to hear a bit about your role in education. What does your day-to-day look like?

Tony Zeikle:

Absolutely. My name is Tony Zekel. I'm the Senior Vice President of Revenue for Lightspeed Technologies. I've had the privilege of working in a number of capacities within Lightspeed for the last 13 years, and I've had the privilege of being able to work with school districts across the country and going into hundreds, if not thousands of classrooms over the years. And being able to interact with teachers as they use our technology, and a lot of different technologies in the classroom. In terms of my day to day it just depends on the day and kind of the course of the school year. You know, today I'm in Phoenix, Arizona at a superintendent conference. I had an opportunity this morning to be able to sit down and talk to about 30 or 40 superintendents about both our technology as well as the challenges that they're facing across their school districts. In terms of my normal day-to-day, when I'm not at a conference, I'm spending a lot of time working with our 19 account reps across the country as they're serving school districts regardless of where they live. And sometimes that means interacting with them virtually and many times also traveling there and working directly alongside them. So I have the privilege of being able to do that, and it makes my day to day varied. Mm-Hmm. Which is very enjoyable.

Monica Burns:

Yeah, I bet. And, you know, I know I also travel around a bit and, and spend time in different schools and districts. And of course, when I'm in a classroom, I was just at a conference where the presentations we did were in someone else's classroom. Right. You know, I'm always

looking around. Right. What do they have here with their technology set up? I was even snapping a picture of a picture book I wanted to get for someone that I spied in the corner of someone's classroom, you know? And as we think about the classroom experience for students, you know, today we're talking about the importance of quality audio experiences for students. How, how does classroom acoustics impact a student's ability to, to hear, to comprehend instruction, to really have their best day?

Tony Zeikle:

Absolutely. And when we think about just hearing and the teaching and learning environment we put a lot of great technologies into the classroom. We do a lot of visual technologies. We have a lot of interactive technologies, one-to-one devices for students. And all of those things are really powerful and good. But if hearing, and it's true that hearing is the primary channel by which students learn, isn't it important that we put technology into the classroom to support that primary channel of learning? And the challenges that are faced in the classroom really tied to three different things. One is audibility or the loudness of the teacher's voice, or the student's voice as they're sharing among their peers. The second one is intelligibility. And then the final one is just how do we create an equitable listening experience in the classroom? So, from an audibility standpoint, the research shows that the optimal listening environment is for the teacher's voice to be at 15 decibels above the ambient noise in the room.

Tony Zeikle:

You don't want it to be too loud, because then it's almost like a PA system. You don't want to mm-hmm. <Affirmative> students to feel like they're being yelled at. On the flip side, if you're not differentiating the signal, which is what we want the students to hear from the noise, then all of a sudden they can't hear as well. Mm-Hmm. <affirmative>. So that's that audibility factor or the, the loudness of the sound coming to their ears. The next one is intelligibility. And intelligibility is a little bit different than audibility. Intelligibility is about the clarity of the speech and how understandable it is. Sometimes I think about fast food restaurants and, you know, when you're going through the fast food restaurant and you have that speaker blasting at you mm-hmm. <Affirmative> it's loud, but it doesn't necessarily mean you're, that you're understanding what they're saying.

Tony Zeikle:

And speech language pathologists know this extremely well. They'll tell you that vowels speak to the audibility of the teacher's voice or the loudness of the voice, but it's the, the consonants and especially the soft consonants that are critical for intelligibility. So you think about the difference of, sounds like the f and the th the difference between thin and thin, those kinds of sounds are critical for intelligibility and especially in a classroom. And, you know, the research shows, especially even for students kindergarten through third grade, they need to hear over 90% of the words spoken in the classroom in order to understand that overall idea. And as I work with teachers across the country, I'm often reminding them, and they know this is true, but students are learning new words from them every day, whether they're defining it or not, because the, the words that they're using in an educational setting are different than what they're hearing on TV or in technology at home or in what normal conversation is happening in their home life.

Tony Zeikle:

So it's really important for those students to be able to hear all of those consonants and even those soft consonants for intelligibility and understandability of speech. This idea really hit home for me at a conference I was at this summer had a privilege of going to a conference where there was a world re renowned teaching and learning expert that was sharing with a lot of district administrators and all the, all the administrators were eager to hear this person speak. But immediately, once he started speaking, there's a challenge. One was the audibility piece. He wasn't quite loud enough. In fact, I have a decibel meter on my phone, <laugh>, so I was actually gonna measure it. Yeah. And he was about eight decibels above the ambient noise in the room. So he wasn't up to that 15 decibel range. The second challenge was that he was from Australia.

Tony Zeikle:

And he had a strong accent, which was different for us to be able to hear. And it made it harder to be able to understand him. So that intelligibility piece was, was there as well. And I realized as adults, we need to hear about 50% of the words being spoken, and in order to piece together the words we're not hearing from the words that we are hearing. And for him, I realized I was only really understanding or hearing about every third word. Mm-Hmm. <affirmative>. And so what happened was the stu every, the superintendents who were really eager to be able to hear what was being said started disengaging. Yeah. Because it was too hard to understand what was being said, even though they really wanted to. And I thought about, I wonder how often this is happening in their classrooms mm-hmm. <Affirmative>

Monica Burns:

Well,

Tony Zeikle:

Where students actually want to learn, but they're having to work too hard to understand what's being said. And as I mentioned with students, it's even more important because they need to hear a high word count to be able to understand the context of what's being said.

Monica Burns:

Gosh, that's such a great point and such a good example. You know, I think of the moments, you know, as an adult where I am very motivated to hear whether it's the announcement at the airport or the fast food <laugh> person I might be talking and ordering with, or, you know, I was at a wedding a few weeks ago where it was really hard to hear the speeches Right. With all the noise going on in the background. So, you know, for a student who might be at that same level of motivation as, as we all are listening in or might not quite be right as motivated, you know, this could definitely be something that impacts their ability to, to hear and, and comprehend and just learn new things. So, you know, are there specific acoustic problems that tend to arise in classrooms and, you know, is there a way to, to mitigate them?

Tony Zeikle:

The most common one is ambient noise. And that can be ambient noise from an H V A C system. It could be ambient noise from other technology. It could be ambient noise from students that are outside of the classroom, as well as even, you know, the noises that are going on in the classroom when you have 20, 25 bodies that are just in a space. Mm-Hmm. <affirmative> all of those are competing for the voice of the teacher and the signal that we want those students to hear. So, you know, what we do is put a microphone on a teacher. And our goal is not for the teacher to be a PA system blasting its students, but our goal is really to get to that 15 decibels above the ambient noise in the room. Even in an empty classroom, A lot of times when I'll go in, I'll go in and measure the acoustics in this sound level.

Tony Zeikle:

Even in an empty classroom, oftentimes you're getting in between 40 and 50 decibels of sound. I often tell people, if you get below 35 decibels, that's when you notice how quiet it is. It might be like in your, at your house at night when the air conditioning or the heat isn't running, or if you're in the middle of a forest where it's particularly quiet, that's when you notice how quiet it's 'cause. So we're always living with ambient noise mm-hmm.

<Affirmative>. But once that ambient noise gets above 45 50, and sometimes, you know, I've been in classrooms before where the H V A C system, or they'll have a wall heating unit that literally will put out about 70 as high as 70 decibels of sound. I was in a, a classroom one time in the St. Louis area where they could not even hear the PA system.

Tony Zeikle:

So they, the students couldn't do the pledge of allegiance with the rest of the school because they could not even hear, 'cause that ambient noise was so high. So those are some of the challenges that you hear in that we see as we go into so many classrooms across the country and are trying to work through those things. So that's really our goal is to be able to make sure the signal, whether it's the student's voice or the teacher's voice, that we're amplifying that so that they can clearly be heard in that instructional setting.

Monica Burns:

And yes. And I can imagine just the spaces that you visit, right. Hearing the pain points from classroom teachers, from school administrators who wanna give important, you know, safety announcements too. You know, there's just so many reasons why, you know, we want everyone to be able to, to hear and process the information that they come across during the day. So, you know, how can teachers adapt their instructional methods when, you know, acoustic conditions are less than ideal when that unit is, is buzzing in the background as they're teaching?

Tony Zeikle:

Well, part of it is a physics standpoint challenge because, you know, we always think about the students that are closest to the teacher having a better experience. Mm-Hmm. <affirmative> in terms of being able to engage. Then the students in the back of the room, you know, my last name is Zekel. So when I was in school, oftentimes it meant that I was in the far

back right corner to start out the here until they reshuffled us. So I always knew it was gonna be harder for me in the back than I would at the front of the classroom. So part of that is just teachers realizing that, and a lot of times teachers will come and say, I have teacher voice. And so I have to explain to them, well, what you're ultimately saying then is that you are raising your voice so that the student that is furthest away from you is hearing you at 15 decibels above that ambient noise.

Tony Zeikle:

But what is that doing for the student that is three feet away from you mm-hmm. <Affirmative>. And they immediately respond. They say, well, they probably think I'm raising my voice or yelling. And I say, I know that's not your intention, but isn't it better if we could create an equitable listening experience? Mm-Hmm. <affirmative> and teachers say 15 to 20,000 words a day. The average person says about 5,000 words a day. So often what we'll tell teachers is put on our microphone and we have a, a special speaker that's designed for voice distribution that will evenly distribute that sound up to about a 1500 square foot area. And teachers, we usually get two primarily responses from teachers when it's tied to that. The first one is I feel like I have so much more energy at the end of the day than I used to. I didn't realize how much energy I was expending just by raising my voice all day, every day for those 15 to 20,000 words. And then secondly, they said, they say, I used to think that I had to repeat my instructions because my students weren't listening to me. And now I realize it's actually because they weren't hearing me. Mm-Hmm. <affirmative>. And so I have better student engagement and I don't have to repeat my instructions nearly as often.

Monica Burns:

You know, and that idea of that unnecessary repetition, the wasted instructional time, and I can absolutely see the connection there to teaching in an environment that has poor acoustics. And, you know, I'm curious with your work, you know, what differences have schools observed, you know, in student outcomes and engagement, which this all ties back to, you know, when instructional acoustics are, are optimized.

Tony Zeikle:

Yeah. I often say from a technology standpoint, there is more independent research behind this technology impacting student achievement and student engagement than any other technology you can put in a classroom. So we have multiple resources on how it affects test

scores, how it impacts specific populations. Obviously we often have worked with special ed populations for students that are specifically have hearing impairments that they're dealing with but even English language learners. And that's becoming an increased percentage of our population across the country. I think it's now over 10% of the US student population is now English language learners. Mm-Hmm. <Affirmative>. So it's becoming a much more prominent piece. And depending upon where you are, that can be even a much higher than that. So there's research around that about even students with EL that are ELL having a 30% increase in word recognition just by having those clear consonants Yeah. Coming to their ears. So I could bore you with a lot of the research data points tied to each of those, but if any of your listeners are interested in it, we'd be happy to share a lot of that research that's available.

Monica Burns:

No, and I'm so glad that you gave those specific examples because there are, you know, specific student populations Right. That can really benefit from that clear instruction. Right. Especially if it's new vocabulary words, right. It's content area or that domain specific vocabulary that, as you mentioned earlier, you know, students might not hear, you know, outside of an academic environment. Right. It's not gonna come up, you know, on a different device, you know, later on in their day. And, you know, and one thing you know too, you know, that I mentioned earlier that I do wanna make sure to ask you about, you know, in addition to the ways we've talked about acoustics so far, you know, how do instructional acoustics connect to school safety? So maybe beyond the classroom, the teacher talking and interacting, but you know, really being able to hear critical announcements and signals throughout a, a school building or a larger space.

Tony Zeikle:

Absolutely. that's really critical and it's a very hot topic right now mm-hmm. <Affirmative> ensuring both that you know, what are schools doing for safety and security and what are they doing from a communication standpoint between the classroom and the office classroom and other staff that are across the school campus. So one thing that we've realized is there's a lot of value in the fact that a teacher has a microphone that's just around their neck and having just the proximity of that. So we have the ability to integrate with paging and intercom mm-hmm. Solutions mm-hmm. That are within a school so that it can provide a silent alert notification. Mm-Hmm. So that if there's trouble or an issue within the classroom, the office can immediately be notified just with a very subtle push of the button from the microphone. In that case, another thing that we can do is immediately mute the instruction

that's going on in that classroom, whether that be the computer audio that may be coming through for the students to hear, or the teacher's voice or you know, a student microphone that may be, we can mute all of that so that the priority is for that page that's coming through.

Tony Zeikle:

So we've, we've partnered with five or six different paging intercom companies to be able to have that ability to be able to do that across school campuses.

Monica Burns:

Wow, that's so powerful. Just that idea of putting pause, you know, on the audio in a classroom environment so that everyone can focus. They don't miss anything, they don't mishear anything either, which I'm sure, you know, comes up more frequently than not. So thank you for sharing those examples because as you mentioned, it is a topic that a lot of people think about. Right. They wanna see that technology connection there too, and, and, and love to see those two pieces, you know, come together. So for anyone listening today who is, is interested in this, right. Who's looking for information, who's ready at that school or district level to, to take a next step? You know, can you tell us a bit more about Lightspeed Technologies what this looks like right. In action in a school or district?

Tony Zeikle:

Of course. Yeah. Lightspeed Technologies, we've been in business for over 30 years, and a lot of people think well, what sectors do you serve? We actually really serve only school districts. We're really focused on the teaching and learning environment and how we can make an impact in that space. So I would encourage people, they're always welcome to go onto our website at www.lightspeed-tek.com. And one of the best ways, I think, for them to be able to experience this technology, 'cause it's great, I can, you know, be on your podcast and be able to share all of this information, but a lot of times they wanna see it in action. Yeah. And we have a free evaluation program so that a school can try out a system without any obligation and just experience it for a teacher and to understand the impact that it can make for their students. And we often encourage teachers when they try out the technology to notice the engagement of your students. And a lot of times what they will find is the students are asking the teacher to turn it on. Mm-Hmm. <affirmative> just because they realize the impact it's

making, and they don't have to work as hard to be able to be engaged in the teaching and learning, learning that's going on.

Monica Burns:

Gosh, what a powerful, powerful note there, you know, to leave with that idea that it becomes such a part of the practice. It's something that students crave, you know, when it's not there, they notice it, which I think is such a testament to the power, you know, of that technology. So, and

Tony Zeikle:

The thing I would add tied to that as well is we know about technology. One of the challenges is just teacher adoption. Mm-Hmm. <affirmative> and being able to use it. And the thing I often will come back to is the harder we make it, and this is for all tech companies, the harder we make it for teachers to use, the less they're going to use it because they have such a high pressure job each and every day serve the students that they're in front of. So we put a lot of work into, into making sure that the technology is really easy and can be adopted very simply in the classroom. And usually teachers will say it takes maybe a day or two to get used to the fact they're being amplified mm-hmm. <Affirmative>. But after that, it just becomes a part of what they do.

Monica Burns:

And that's, and that, you know, piece of, of getting everyone on board, having them see the value, making it easy, right. For someone who has a lot on their plate is just so, so massive and, and such a great testament to the work that you do being in tuned <laugh> with the needs, you know, of, of classroom teachers. So Tony, thank you so much for your time today for sharing with listeners on this information that I think will help them, you know, take a step back, you know, and, and look at the way that acoustics are, are working or maybe not working, you know, in the environment that they're in. And anyone who's listening right now can click, can learn more. I'll put all the links in the show notes. Is there anything you'd like to add about where people can connect with you or where they can learn more about your work?

Tony Zeikle:

I think we summed it up really well, Monica. It was a privilege to be able to spend this time with you and look forward to hearing some of your other as well.

Monica Burns:

Oh, thanks so much, Tony, for your time today.

Tony Zeikle:

Thank you. <Silence>.

So let's make this EdTech easy with some key points from the episode...

Reflect on the audio quality in classrooms.

Address audio concerns so every student can hear clearly.

Determine the role audio plays in your school safety plan.

Remember, you can find the shownotes and the full list of resources from this episode on classtechtips.com/podcast including all of the ways to connect with the team at Lightspeed.

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Outro

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their podcast app. Have a great week and check back on Tuesday morning for next week's new episode.

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- [Lightspeed Instructional Audio + Video Solutions for Schools](#) (Blog Post)