Exploring Engineering with Infants and Toddlers

Treshawn Anderson: Hi, everyone. It's great to be back with you for Teacher Time today. I'm Treshawn Anderson, and I'm from the National Center on Early Childhood Development, Teaching, and Learning, and joining me today is Judi Stevenson-Garcia. Hey, Judi, can you remind us all about what's been happening during this Teacher Time season? Judi Stevenson-Garcia: Sure, Treshawn. I'm happy to, and I see that you have a little bit of pink on today, just like I do. I don't know about you, but I am ready for a short winter and an early spring, so we'll keep our fingers crossed for that. Anyway. Hi, everyone. Welcome back to another episode of "Teacher Time." We're really glad that you joined us today, and if you've been with us this season, you know that we are exploring STEAM, which is science, technology, engineering, the arts, and math. And as we do every Teacher Time season, we spend four episodes focused on supporting preschoolers and four episodes focused on supporting infants and toddlers. So we've already gone through science and technology, and if you missed those episodes, you can find them in the Teacher Time community on MyPeers.

Treshawn: Thanks, Judi, and because we love STEAM and we were so excited about it this season, our team sent every education manager a STEAM Celebration Box, and this box contains lots of resources to support you in using STEAM all year long. Have you seen your STEAM Celebration Box yet? I know I have. [Laughing] Well, if you've seen it, let us know how you're using it on MyPeers. I know some people have been asking how others are using it, and if you haven't seen it yet, no worries. Go ahead and ask your ed manager about it, and if they haven't seen it yet, you guys can go ahead and print and use some of the materials that are in the special folder on MyPeers. It's labeled Steam Celebration Box Materials. Also here with us today is our Q&A facilitator, Jan Greenberg. Hey, Jan.

Jan Greenberg: Hi, Treshawn and Judi, and hi to everyone participating in today's Teacher Time episode. I'm here to answer your questions about helping infants and toddlers explore engineering concepts and skills, so remember to use the purple Q&A widget to ask your questions, and I look forward to chatting with you.

Treshawn: Thanks, Jan. She's always so helpful in answering your questions that you ask in that purple Q&A widget, so be sure to interact with her during this episode. Also, our guest expert, Dawson Nichols from iLABS, is back with us today and so he'll join us later to provide some ideas for supporting engineering learning with your infants and toddlers.

Judi: Thanks, Treshawn, and hi, Jan. Thanks for being our Q&A facilitator again today. I also got my STEAM Box, and I just wanted to say that one of the things I'm excited about is these booklets that have resources in them, and the booklet number three has some great ideas for using words and questions with young infants. So ways to ask young infants questions, introducing novel words to older infants and toddlers, and introducing novel words to young infants. It's so exciting to have these resources, so check out your boxes if you've gotten them, and if you need extra resources, these are all, as Treshawn said, in MyPeers. We want to remind you to download the Viewer's Guide, which you can find in the green resources widget. We've designed it for you as a way for you to write down your ideas and some new strategies as we go through the episode. If you don't have a printer, that's fine; you can just download it onto your computer screen. It's a fillable PDF, so you can save it, maybe print it out later, but

we would love for you to use that. If you'll recall, if you've been with us for our previous episode, Science and Technology, sometimes we'll watch a video, and then we'll stop and give you a minute to write down your ideas, so the Viewer's Guide will help you do that, so take a minute and just download the Viewer's Guide now.

Treshawn: OK. So now for today's episode. As we said earlier, this episode focuses on the "E" in STEAM, which is engineering. And we're going to share ways that teachers and family child care providers can support infants and toddlers in exploring engineering concepts. To start, let's talk about what we mean by engineering. What comes to mind when you hear that word? Do you know anyone who is an engineer? You might think of people who build buildings or design bridges, but when we think about engineering in early childhood, it's all about using materials, designing, crafting, testing how things work, problem-solving, combining materials and objects in new ways, and building structures. Engineering helps us understand how and why things work. You may observe infants beginning to explore engineering concepts when they hold blocks and put them in their mouths or when they try to move beads around a maze. This exploration helps them begin to understand how things work and how objects fit together. You may observe toddlers trying to stack rings and fit stacking cups together, or building horizontal or vertical structures with blocks and other objects, or maybe use one object to support another, such as using Play-Doh to keep sticks standing up straight. Here is an example of infants and toddlers exploring a type of engineering you may not have thought of—sound engineering. Sound engineering, also known as audio engineers, design and produce music and sound experiences in film, radio, computer games, and theaters, so when you see infants and toddlers exploring different sounds that they can make, they're practicing that audio engineering. Pretty cool, right? For example, listening to the sound that a wooden block makes as it drops into the large plastic container, or shaking rain sticks, or banging metal measuring cups against metal bowls.

Judi: Wow, Treshawn, sound engineering is definitely a new one for me. That's really exciting to think about when infants and toddlers are banging away, that they are exploring engineering concepts. I love it, but one of the things that we want to remember when we think about exploring engineering with infants and toddlers is that they are developing skills related to their Early Learning Outcomes Framework or the ELOF, as we like to call it. So think about learning, approaches to learning cognition and perceptual, motor, and physical development. These are major domains that they are developing knowledge and skills in as they explore engineering. So each domain has developmental progression that you support when you offer opportunities for children to explore engineering concepts. So think about when children are building or stacking blocks. They are focusing on what they're doing. They might have to persist on rebuilding when their structure falls over. That's approaches to learning. Also, when children explore and discover how to make loud and soft sounds with some audio engineering, when different objects make different sounds, or when they problem-solve to build a tower that won't fall, that's cognition. And when children move beads along a maze, or nest cups inside each other, or stack cups on top of each other and put blocks together, pull them apart, that's perception and fine motor skills. So as we talk about engineering in this episode, think about how the strategies that we're going to give you are going to support your goals for children that you work with in terms of the ELOF.

Treshawn: Thanks, Judi. Way to connect the ELOF to children's engineering skills. To go along with this, research tells us that children start using engineering skills and concepts very early on, such as gravity and density. For example, when babies drop a toy over and over again and they learn that it will fall down over and over again, they're beginning to learn about gravity. And they're also learning about density when they go to grab a toy and they notice that the stuffed animals are soft, and the plastic cups are pretty hard. In one study, researchers showed some 1-year-olds a car rolling off the side of a table and then falling, and other group of children saw the car rolling off the side of the table but then hover in midair, definitely not something a car is supposed to do. When given the car to play with, babies who saw the car hover in midair tended to drop the car, exploring their concept of gravity, and in a different example, some of the 1-year-olds watched a car roll down a ramp and stop when it hit the wall, whereas other babies saw the car roll down a ramp and appear to go right through that solid barrier. So when babies were given the car to play with, babies who saw the car go through the barrier tended to bang it up against the wall, exploring their concept of density. This means that even young children observe and experiment to learn different physical rules, such as cause and effect, and they explore when they see something that violates those rules.

Judi: That is so interesting, Treshawn, and it makes me think back to the days when my kids were little and would constantly throw things off their tray when they were sitting at their high chairs, and it was super frustrating, but now I know that they were exploring engineering, so we can't go back to those days, but hopefully those of you who are watching will think a little bit differently about your infants and toddlers when they repeatedly drop things. So when we think about STEAM, we have ... If you've been with us during our previous episodes, you know that we kind of highlighted a couple of different ways to approach supporting infants and toddlers in exploring STEAM concepts. The first is to provide engaging environments. The second is to provide nurturing and responsive interactions, and then the last one is to provide interesting and engaging learning opportunities. Remember when we think about learning environments that are engaging, they have open-ended materials that are varied and accessible to all of the children that you're working with. So let's take a minute and watch a video. We're going to focus on the environment. Let's watch a teacher as she plays with a young toddler who's working with foam blocks. As you watch, observe for the materials that are open-ended, varied, and accessible. [Video begins]

Teacher No. 1: Yeah, try that one. Oh, you want to try this one?

Baby and Teacher: Uh-oh.

Teacher No. 1: You want to try the rectangle with squares? Uh-oh. You've got to make sure it stays on. Teacher No. 2 Thank you. There's no more. Teacher No. 1 What is that? Is that the same? It's a rectangle, yellow. This is a triangle, green. Oh, you did it. Let's try a circle. Can you get it? Uh-oh. You want to try again? Let's move it closer to you. There you go. Let's try this again. There you go. There you go. Yep, almost. Oh, almost. Oh, let's put it ... Want to put it next to it? You got it? Uh-oh. [Video ends]

Treshawn: That was so much watching this toddler build with blocks. I mean, he was so focused and persistent about stacking them so that they wouldn't fall down, right? Engaging environments include open-ended materials, like blocks, because they can be used in different

ways and combined during play. Other types of open-ended materials include things that can be used in different ways, like foam and plastic and cardboard and wooden blocks and different sized boxes and objects that fit together like interlocking stars and magnet tiles and nesting cups. Even different sized tubes and different ramps of widths and lengths can be used as open-ended materials.

Judi: That's right, and did you also notice the variety of blocks? Different shapes, sizes, and colors. This variety of materials is important as children are beginning to build an understanding of these early engineering concepts. So if you have different materials that children can put together and pull apart, things that can stack within each other or on top of each other, you have a variety. Children are also interesting in things that are new, so one way to do this is to rotate your materials. So for example, maybe bringing out something new once a week, some materials that they haven't played with in a while. It's going to pique their interest, and they're going to want to explore those materials. This might help you feel like you don't have to have everything out at all times. Sometimes, especially for young children, less is more. And then finally, when we think about variety, it's also really helpful to create safe spaces for children to explore by giving them some opportunities to play with materials that are familiar to them. So look for opportunities to include some materials that are familiar to children that represent them or their families or their cultures. Including these materials is going to encourage children to explore engineering concepts.

Treshawn: Finally, did you notice how accessible the materials were? I mean, there were blocks on the floor, and there were some blocks on low open shelves, and there were enough blocks for multiple children to use even though we only saw one child using them in this video. some blocks were on the floor or on an even surface, and there were some large blocks and smaller blocks so that children with varying fine motor abilities could use them. Accessible also means making sure that all children can use the materials. For example, a child who may have difficulty with grasping objects may benefit from a knob or a handle that is attached to the building materials. And you can also think about the different surfaces where engineering explorations take place. For example, is the height of the table appropriate for all children, or is the surface smooth so that the materials can slide across more easily, or rough or rubbery to keep materials in place? Think about these things when determining the accessibility of the materials in your learning environments.

Judi: OK. So now that we have talked about materials that you can use to support engineering thinking, we're going to give you a minute to think about your own learning environment and what materials you have that will support children in this area. You're going to need your Viewer's Guide for this, so if you haven't downloaded it yet, you can do that now. Remember it's in the green resources tab. So we're going to give you just a brief minute to write down what your favorite open-ended materials are, and think about the materials that really support the children that you work with and whether or not they're accessible. When we come back, we'll give you the opportunity to share some of your ideas with each other. [Music] [Music] [Music] [Music] Now it's time to share your ideas with each other, so we're going to use the ideas widget again, except this time we're going to use the orange one. So go ahead and open that up, and you'll see that there's a space in there for you to share ideas with each other about your favorite open-ended materials. You can respond to each other. You can give each other a

thumbs up if you like the suggestions and maybe add the age group that you work with. So if you work with young infants, you can say, "I work with young infants, and I found that these materials are really great for helping my young infants explore engineering concepts." So hopefully as you share, you'll feel motivated and inspired to use even more open-ended materials with the young scientists and engineers that you work with each day.

Treshawn: Our next strategy is to provide nurturing, responsive, and effective interactions. Remember, infants and toddlers are more likely to explore and learn when they feel safe and experience consistent, positive interactions with caring adults and when adults engage with children during their exploration. So let's take a minute to watch some little engineers in action. As you watch these children learn about engineering by testing how things work and using and combining objects, use Box 2 of your Viewer's Guide to write down what you might say or do to support their exploration. Go ahead, let's watch. [Video begins] [Indistinct conversation]

Man: OK.

Woman: Fire truck. [Indistinct conversation]

Woman No. 2: [Speaking native language] [Singing in native language] Sing! [Speaking native language] [Video ends]

Treshawn: These were such great videos, and there are a lot of ways that we can provide nurturing, responsive, and effective interactions with these infants and toddlers as they explore. One way is to describe what children are doing. This is called parallel talk or sportscasting. For example, you might say, "You're touching the bead on the maze and trying to move it along the wire with your hand," or, "You're pulling the magnet tiles apart and building a colorful structure on the floor," or, "You're using the scoop to pour water into the top of the water wheel. Hmm, I wonder why the wheel isn't moving."

Judi: I love those ideas. Those are great suggestions because they also do one thing, right? They help us think about joining in with the children in their explorations but not taking over. Sometimes it's hard. We want to jump right in and do something, or fix something, or help someone figure something out. Like the example with my own son. I really wanted to just give him the right block so he could stop being frustrated in trying to get his animal to stay on top. But by being there next to him, I could offer suggestions. "Maybe this one would work," or, "What do you think about this one?" So we want children to explore on their own while also providing support that will help grow their development and learning, and this is scaffolding. So think about, you know, for example, taking turns with a bead maze, touching and moving the beads, or waiting and seeing if a child gets stuck in a particular spot and maybe needs some help or new ideas on how to move the marble through the maze. If you use magnet tiles on the floor, you can think about new ways to build structures, or if you're working at the water table, think about different numbers of scoops that you can use. Maybe add another scoop or say, "I'm only going to use half a scoop." So you want to be next to the child, engaged in the play and then also supporting their learning, especially giving them time to learn and problem-solve. You can offer cues, verbal and physical prompts, questions, and then you can also model to help them figure out even more than what they might be able to learn on their own.

Treshawn: Yes, we definitely want to give children time to figure out things on their own. That's so important. At the same time, we also want to provide explanations and encourage children to communicate their ideas. Explanations use cause and effect statements or explain the reasons why something happens. For example, you might say, "You pushed the bead on the wire, and it stopped moving because there were lots of beads in front of it." And to model reasoning, adults can comment on their own thought process or the child's to help them evaluate a choice or a challenge. For example, you might say, "You had a little bit of water in your scoop, and when you poured the water in, the wheel didn't move. I wonder what would happen if you put a lot of water in your scoop. Maybe pouring a full scoop of water would make the wheel move. What do you think?" Use lots of nouns and verbs to describe basic engineering concepts such as stacking and building, and containing, and putting things together, and taking things apart.

Judi: Yes, comments and questions like this offer children opportunities to think, problem-solve, and to communicate their ideas. And yes, even young infants can communicate what they're thinking. Also, if you work with children who are dual language learners, be sure to ask some open-ended questions in children's home language if possible, and if you have a recording device, you can record their responses and perhaps talk with a parent or family member or someone who you work with who speaks their home language to help you understand their response. Also, you might want to think about learning a few simple open-ended questions in the child's home language, such as, "What happened?" or, "What's next? Show me how you did that." Also, if you have children who may have hearing impairments or speech delays, it's important to talk with their families about how they communicate with their children at home and strategies that you can use in your setting. So you may have children who use sign language or communication devices to answer questions and tell you what they're doing and what they're thinking.

Treshawn: That's right, and for children who are dual language learners, strengthen what they already know and build new learning by using complete simple sentences in their home language to talk about structures and explain how things work. Make sure to ask parents to teach you words for engineering concepts that their child may seem interested in. Try to use the same words that the parents use for things like, "Make a quiet sound," or, "Make a loud sound," or, "Put this on top," and, "You made that work," or maybe learn words like "heavy," and "light," or "too big," or "too small" in children's home language. If you only know a few words in the child's home language, take time to explain and demonstrate the connections between the words in their home language and the words that you're using to talk about the engineering action. Remember, use vocal emphasis, and gestures, and repeating sentence patterns to give children clues about the word that you mean. And if you're fluent in the child's home language, that's even better. Try to have a whole conversation about the object and the action entirely in the child's home language. Because supporting infants and toddlers to learn their home language first is beneficial to their overall language development. Only introduce English if that's a specific goal for your setting or for that particular child. And also look in the resource tab for one of our STEAM Celebration Box booklets on how to speak STEAM. These have great ideas there that you can use to support language and communication with the infants and toddlers in your program.

Judi: Let's take a minute to watch two videos of teachers using some of these strategies. So first we'll watch a video of a teacher supporting a young infant and a mobile infant to explore engineering concepts and skills. Pay attention to the way she scaffolds, a way she introduces basic inquiry skills, the way she speaks the language of engineering, and the way she invites children to communicate. Make sure you use Box 3 in your Viewer's Guide to write down some ways that you see this teacher engage with children as they learn engineering concepts and skills. [Video begins]

Woman: How does that feel on your gums, Alexandra? How does that feel? Does it feel hard? Does it feel hard? Do you want to try something different, Mia? Well, thank you. Good cleaning up. You put it in the basket. You put it in the basket. Huh? What's this? What's this? What is that? You want to see? Come. Come. Are you feeling a little shy? The giraffe, let's see how the giraffe works. Let's try it. Look, twist. Twist it on. Twist it off. You want to try? Twist. Yes, you're turning it. You made it tighter. [Video ends]

Judi: I love that video. So here are a couple things that we noticed with some examples of each strategy. So first, she demonstrates and describes how the toy works, and then she lets Mia try. She scaffolded by holding the toy for Mia. She said, "Let's try. Look, you want to try? Twist. Yes, you're turning it. You made it tighter." Do you hear that engineering language? She used those words and phrases. How does it feel? Does it feel hard? The giraffe, let's see how the giraffe works. Let's try. Look, twist it on. Twist it off, you're turning it. You made it tighter. She also asked questions and paused to see if the children would respond. How does that feel on your gums, Alexandra? Is it hard? What is that? You want to try? She also responded when Mia's foot touched the giraffe and Mia vocalized. "The giraffe, let's see how the giraffe works." She encouraged communication by asking, "How does that feel on your gums, Alexandra? Do you want something different, Mia? What's this?"

Treshawn: OK. So here's the second video. Let's look at the ways this teacher supports children's engineering thinking. Let's watch. [Video begins]

Woman: Here's another orange, round toy. Here, you can feel it, too. [Indistinct conversation] Yeah, got it. So let's put this orange one inside now. Ready? You try. In it goes. Here's a yellow one. [Video clip ends]

Treshawn: What a great video of a teacher supporting this infant's exploration of engineering concepts. So let's take a Teacher Time minute to write down in Box 3 of your Viewer's Guide what you noticed in both of these videos about the ways teachers support children's learning of engineering concepts. Go ahead, take a minute. [Music] [Music] Time's up. I hope you had some good time to reflect on these two videos. So some of the ways you can support children learning engineering concepts are to comment, describe, and ask questions like, "Here's another stacking cup," and, "You're holding the cup and putting it in your mouth. Does it feel hard? Can you put the orange cup inside of the green one? Do you think it will fit? Let's see." You can also use words and phrases like, "The cup feels hard and smooth," and, "The cup is really easy to pick up because it's light. It's not heavy. Put the orange cup inside of the green one. Look, each cup fits just right inside of the next." And lastly, ask questions like the ones when you're introducing basic inquiry skills and wait for a response. And for infants and toddlers, questions might be in the form of what the child is looking at or a particular body

movement or a gesture or maybe a small vocalization. Then you can respond to what you think the child is saying.

Judi: This is a great transition to our last topic: using experiences and learning opportunities to support engineering learning with infants and toddlers. We are excited to have our guest expert with us again today, Dawson Nichols. He's here with us to talk about some things that you can try tomorrow. Use Box 4 in your Viewer's Guide to write down some of the great ideas he's going to share and how they might fit into the curriculum you use in your program. Hi, Dawson. Welcome back to "Teacher Time."

Dawson Nichols: Hi, thanks for having me again. I am really excited to be talking about engineering for infants and toddlers because there are so many fun things that we get to do when we're exploring this with them. So let's start talking about it. When we are looking at engineering principles with children at this age, we're really talking about how materials relate to each other, how we can stack and build and design things with different kinds of materials. And for that reason, open-ended materials like blocks are really, really good, and you don't need to buy an engineering kit or anything like that. You don't even need to buy blocks. You could use cereal boxes or other things that you have around the house. I like to use very simple things, like these very simple blocks, but when we're talking about the exploration that we do with these things, let's recognize that for the youngest infants, it's going to start pretty simple. We're going to have a block, and we're going to stack another block on top. I would suggest, however, that this is more complex than it looks at first because I have just learned quite a bit about these two materials. The big one can support the little one. The little one is stable on top of the big one. I wonder if I did it the other way, could the big one be stable on top of the little one? Yes. The big block can be ... Oh, but it's not always. Oh, so sometimes it is, and sometimes it isn't, and now I have begun to learn some really important engineering principles through this simple exploration, things like balance and stability. So this kind of exploration is so, so important for very young children to have, which is why we offer them these different kinds of materials, and don't forget, when they are putting materials away, when they're helping you. This is for older children, obviously, but they can learn a lot about how materials fit together, another important engineering principle. But as they're playing with these open-ended and accessible materials, we want them to be varied as well, and this is not just because children, you know, we want to maintain their interest but also because every new shape is a new experiment for a child. How is this stable? Is it stable? It's not stable that way, but it is stable that way, and I'm learning about shapes and how they interact with each other and the environment, and look, there's even motion involved with this one. That's like my rocker. So we want them to be varied as well, and your responsibility in facilitating their play with these sorts of materials is like it would be for any STEAM activity, and that is simply you want to play alongside them. You want to enjoy it so that they can see that this is a fun and engaging activity. You want to model persistence and show them that they can work through difficulties. You want to scaffold for them so that if you think that you can help them understand some new concept or push them to explore in a slightly different way, absolutely. Go ahead and do that, but also you want to talk. You want to use the language of engineering with them, and you can do that by narrating your own play, or you can do it by sportscasting the play that they're doing. "I'm going to put one block down. I put another block on top. Look at that. It's on top, and this

block has a sort of tunnel, a hole in it. I can put another block underneath." These position words, prepositions, are really important because they relate one object to another, and objects can relate to each other in a huge number of different ways: over, under, on, through, around, inside, and children have to learn all of these things. So talking to them as they're engaging in this play is really effective strategy for helping them learn these things. If you are facilitating them and you've done a lot of stacking and building, and you've made walls, and you've built towers, one thing that I like to remind people of is balance. It's not the most obvious engineering principle, but it's an important one, and we can help children understand it by just playing with balance with them. I can take this, and I can put a weight on one side, and it becomes unbalanced. Balanced and unbalanced, and now this is a ramp, and with older kids, I can show them, "Look, if you put a weight on the other side, it can come back into balance. That's almost magic, isn't it? These heavy things are up off of the ground on both sides, and we can stack more things." And again, the wonderful thing about these open-ended materials is that they can become more complex as the play becomes more complex. They're naturally scalable, so they're wonderful that way. But think about balance. And I mentioned motion a little bit ago. Think about motion, too. Children love motion, and exploring motion is part of what engineering is about. You can explore motion through ramps. This is a ramp that I used with my kids. It doesn't require, you know, complex materials. It's just a piece of wood, and you can lay it down, and then you can explore with how different things will roll down this ramp. Here is a ball with, curiously, feet on it. I'm not sure why, but we can watch that roll down, and my kids used to like to put objects at the bottom too so that they could see if they could knock them over. You can use a ball, and you can use a cat toy that's kind of soft, and that one goes slower, and it doesn't go quite as smoothly, and I've learned a lot just by watching that. And don't think that everything has to be able to roll. I can take one of these blocks and put it at the top, too. It slides, and now I know the difference between rolling and sliding. Again, this kind of experimentation, it takes time. It takes a lot of time and a lot of repetition, but it is so much fun, and it is so engaging for children. They love this kind of thing. The last thing I wanted to leave you with was the idea that children explore with their whole bodies, and they learn with their whole bodies. Lots of children like to make forts, and I'm actually recording this in my basement, where I used to make a lot of forts with my kids, and I'm noticing now that I have pillows. I have some blankets. I have all the materials I need to start learning about how to, you know, build doors and build enclosures, and I can go inside. I can go underneath the table. Again, all of these spatial terms are helping me understand all of these concepts, so I'm going to reminisce, and I'm going to build myself a fort because our time together is at an end. I will see you next time for our explorations of math, and until then, I'm going to be under the pillow and inside my fort. So long.

Judi: Oh, thank you so much, Dawson. These are great ideas. I love them, and I bet you can find ideas like these in your curriculum. Wouldn't it be fun to do a curriculum scavenger hunt to find materials and learning experiences that support engineering learning? You might be pleasantly surprised by what you find.

Treshawn: Yeah, Judi, a scavenger hunt would be a great idea. You can even encourage parents to find engineering materials that they can use with children at home. It's great. So finally, let's talk about the arts and how they can be used to support children's engineering and exploration.

Did you notice that we've already mentioned some art experiences doing this episode? Well, the arts really engage children's senses and offers opportunities for creativity and reasoning and problem-solving, and think about the different experiences like creating 3D art out of Play-Doh, or building sculptures out of wet sand, or exploring sound and making music, or even building a fort for some pretend play. All of these require some type of engineering thinking. So we're going to watch one more video that shows a teacher with a group of young toddlers. The children are being sound engineers—remember we talked about that earlier—and as they explore, they're making sounds with their musical instruments. Watch and listen as this teacher shows one boy how to bang two wooden sticks together and then asks if he likes the sound. Let's watch. [Video begins]

Woman: One, two, one, two, one, two. Can you do it now, Zoe? [Music] Thank you. We don't hit with that. You want to shake this one? This one shakes. That's a hammer. You want this one? [Music] There you go. There you go. Do you like that sound? Do you like that sound? [Video ends]

Judi: That's right. Did you notice the engineering environment, effective interactions and a wonderful engineering learning opportunity? I think you might think about music time differently from now on, right? You're supporting little scientists in becoming audio engineers. So let's just take a minute to recap today's episode—the main ideas. Remember, children are naturally engineers. They are curious about why and how things work. You can support that curiosity by providing engaging and accessible environments, making sure your interactions are nurturing, responsive, and effective, and offering many opportunities for children to explore and learn about engineering concepts and skills. Supporting engineering learning helps children develop in all of the ELOF domains and prepare them for a lifetime of learning, so be an engineer with children and explore together. Thanks so much for being with us today. We really enjoyed our time; I hope you have, too. Before we go, we want to tell you about some of the resources that we have here at DTL to support you as you think and learn with the little scientists that you work with each day.

Treshawn: OK. Great. So for more information about how to support the exploration of STEAM concepts with the children you work with, you can visit the ECLKC web page that you see here. There are lots of videos and lots of links to different resources that you can use in your programs. Also don't forget to download that Speaking the Language of STEAM booklet from the STEAM Celebration Box. We posted it in our green resource widget below, and if you would like all the STEAM booklets, you can ask your ed manager for them or go to the special folder in MyPeers labeled "STEAM Celebration Box Materials," and you can download them there for yourself as well. Speaking of MyPeers, MyPeers is a virtual, informal social community used to exchange ideas, and share resources, and lend support to the early childhood community. And if you haven't joined already, you can do so via the ECLKC, and there will be a link to join at the end of this episode. You'll find us there in our Teacher Time community, and we'll be posting more videos and sharing some strategies related to supporting the little scientists in your program. There are about 58 open communities on MyPeers with over 10,000 members, so in addition to "Teacher Time," you might find some other communities that look interesting as well. So we've provided a handout for you in the green resource widget that lists some relevant communities that you may want to join. One community in particular, the "Culturally and

Linguistically Responsive Practices," or CLRP community, will be hosting their Dual Language Learners Celebration Week this month, so be sure to sign up for the Celebration Week e-learning experiences in the Individualized Professional Development Portfolios on the ECLKC, and join the CLRP community to share ideas and get some resources. Let's support using children's home language in all learning environments.

Judi: OK. I'm definitely planning to sign up for that DLL celebration. Thanks, Treshawn. I wanted to share with you a couple of digital resources that we have. You may know Text4Teachers. It's a free texting service that will send you two free texts each month with some ideas and tips, research, and resources that will help you improve your teaching practices. Also we have the ELOF2GO app. This is a wonderful app that will support you in understanding the ELOF and goals for children. It also gives you some examples of effective teaching practices to support children's growth and development, and this app is available in Spanish, too, which is great. Finally, if you work with children who are dual language learners, the DLL app is a great way to find some weekly activities, resources, and videos that will help you learn more about effective teaching practices. It also provides key words and phrases in Spanish, Arabic, Mandarin Chinese, and Haitian Creole. Finally, our next Teacher Time is going to be March 3. We're going to talk about exploring engineering with preschoolers, and then please remember to join us on April 7. That will be our last infant/toddler episode. We'll be talking about supporting mathematical thinking. Well, thank you for being here with us today. We have had a great time. I hope you did, too. I hope you're inspired to get out there and support engineering thinking with your infants and toddlers.