Exploring Technology with Preschoolers

Treshawn Anderson: Hi, everyone, and welcome to "Teacher Time." I'm Treshawn, and I'm from the National Center on Early Childhood Development, Teaching, and Learning, and I'm so excited to be here with you guys today to talk about exploring technology with preschoolers. Joining me today is Judi Stevenson-Garcia. Hey, Judi.

Judi Stevenson-Garcia: Hi, Treshawn, and hi, everyone. Thanks for joining us again for another "Teacher Time" episode. We're so glad to have you here with us. If you've been with us already this season, you'll know that we're exploring STEAM, and that stands for Science, Technology, Engineering, the Arts and Math, and so each episode we're going to be exploring one of those elements with the arts kind of interweaved throughout each one, and we're excited today to talk about technology.

Actually we're excited about the whole season, and as a way to share our excitement with you, we have developed a STEAM celebration box, and we sent one to every ed manager, so if you haven't seen it yet, you'll definitely see it soon, or you should. It's on its way, and there's a bunch of resources in there that we're hoping will be really helpful for you in implementing STEAM teaching practices and learning opportunities to support your preschool in exploring those concepts. Also, as a way to share those resources, we've uploaded everything that's in the STEAM celebration box into a special place on our MyPeers "Teacher Time" community.

So if you go to the "Teacher Time" community, you'll see a special file there that has all of the resources that you can download to use for yourself.

Treshawn: Thanks, Judi. You guys, we had so much fun putting together this STEAM box, so let us know on MyPeers how you guys are using it. So for today's episode, as usual, our friend Jan Greenberg is back, and she'll be our Q&A facilitator. Hey, Jan.

Jan Greenberg: Hi, Treshawn. Hi, Judi. Hi, everyone. I'll be here to answer any of the questions you ask through the purple Q&A widget. Looking forward to chatting with you.

Treshawn: Thanks, Jan. She's always been so helpful in answering your questions, so be sure to chat with her during the episode. Also for this episode our guest expert, Gail Joseph, sent us a list of books and some tips that will help you support technology learning with your preschoolers. So later in today's episode, Judi is going to take us on a virtual field trip to the library to show us what she's found, so stay tuned.

And one important reminder to help you follow along with today's episode is, if you haven't already, please download that viewer's guide. You can find it in the green resource list below in that row of widgets. We've designed it this year with spaces for you to reflect and write down new ideas and some strategies that you'd like to try, and if you were with us for our science episode, you'll remember that we stopped a few times throughout the episode to give you a "Teacher Time" minute to reflect on what you've seen or things that you're thinking about, so if you don't have a printer, that's OK; the document can be used on your desktop because it's a fillable PDF, so all you have to do is open it up and type in your notes and then save it right to your computer.

Also, at the end of today's webinar, we're going to post a link to an evaluation form, and we'd really appreciate if you could complete the evaluation because we use this information for improving our future episodes, and when you complete the evaluation, you can download a certificate of completion for your participation. And if you're viewing the webinar with a friend and only one of you guys signed up for the webinar, that's OK. Just go ahead and forward the evaluation link to your friend who also viewed the webinar with you so that they can complete the evaluation and receive their certificate of completion, too.

Judi: OK, so before we begin, I just want to orient you to our webinar platform just in case you haven't used it before. We have a bunch of widgets down at the bottom of your screen. If you look down, you can see them, and we're going to be using a bunch of them for this episode, so I just want to let you know what's going on there.

As we mentioned before, you can submit questions to Jan through the purple Q&A widget. She's there to answer questions that come up, and hopefully we'll get to some of your questions as well throughout the episode, and also if you have any technical issues and have a question about technical aspects of the webinar platform, you can put your questions in the Q&A box, and someone will get back to you there with some support.

If you would like to download the PowerPoint slides from today's episode, you can do that in the blue slide-deck widget, and then also, in addition to the viewer's guide in the resources widget, we have some other resources that are there for you that we're hoping you can use to support your practice with your preschoolers, so feel free to click on the resources widget, download everything that you need there.

We also are going to try out a new widget today; it's called the ideas widget. It's that yellow widget with the ideas yellow light bulb in it, and if you open that up, it's going to show you a question, but we don't want you to answer it yet; we'll tell you when to answer it, but it's a way for all of you out there to share your great ideas with each other, so we're looking forward to seeing how that works today.

Lastly, you can get some answers to common technical difficulties in the yellow help widget at the bottom of your screen. You can also find closed-captioning widgets in both English and Spanish, so that's all there for you. All of your widgets, when you open them, you can resize them. You can make them bigger or smaller. You can move them to wherever you want them to be. You can also close any widgets that are on your screen if they're distracting or if you just don't want to have them up on your screen, so you can open, close — whatever you want.

It's a flexible webinar platform so that you can see exactly what you want to see. Finally, just to make sure that you can view the videos that we're going to be showing you today, make sure that you enable the Adobe Flash Player on your computer. That will help you see and hear the videos. Also what will help with the webinar, your viewing experience, is if you're logged into a VPN, log out, close out any other browsers you have active on your computer. That will help the webinar run more smoothly, and if all else fails, you can always press F5 on your computer. That'll refresh the screen and hopefully bring you right back to where you started.

Treshawn: OK, so now for today's episode, we're talking about the "T" in STEAM, which is technology, and so when we think about preschoolers and technology, we may imagine preschoolers using and learning from smart boards and tablets, and while smart boards and tablets and computers are part of technology, the term technology also refers to any type of human-made object or tool that helps us achieve a goal, and so with that said, technology includes simple tools like pulleys and wheels and levers and art supplies like scissors and clay tools, but technology also includes familiar objects like eating and kitchen utensils and measuring cups and containers for scooping, even a balance scale for weighing, and containers for collecting and carrying objects.

These technologies allow children to understand how tools help us accomplish a task, and these tools support children's cognitive development because children interact with these tools, and they observe and learn from the underlying cause and effect. For example, using a bucket, which is a tool, helps me carry water or dirt from one place to another, which is my task. The Early Learning Outcomes Framework, or as we like to call it, the ELOF, helps us think about how tools and technology support children's growth and development.

Think about measurement and what tools children use to compare height and length and weight. As they explore and compare, they use initiative and curiosity and creativity, and all of these can be found in the Approaches to Learning domain, and as children experiment with balance scales and building blocks or different-sized containers at the water table, they're learning about measurement and geometry and developing their spatial sense, and that's all a part of the Cognition domain. Lastly, when preschoolers work to use these tools, they are strengthening their small and gross motor skills, and those are part of the Perceptual, Motor, and Physical Development domain.

Judi: I think it's so wonderful that exploring technology concepts supports children's learning and development in so many of the ELOF domains, so let's take a look at what this looks like in action. We're going to watch a video, and for this you're going to need your viewer's guide, so if you haven't downloaded it yet, take a second to download it now. Remember, it's in that green resources widget at the bottom of your screen.

So, just to set the context for this video, these are preschoolers who are exploring what it's like to roll a cylinder down ramps that have different textures on them, so in this video, they've just rolled it down a ramp that has tinfoil on it, and they're measuring to see how far it goes, and they're going to compare it to how far the cylinder goes when the ramp is covered with felts or sandpaper, and as you watch, just pay close attention to how the children are exploring technology and also what the teacher is doing to support their exploration as they go through this activity.

Remember, technology is an object or tool that helps us to achieve a goal, so let's take a close look. When we come back, we'll let you spend a minute to reflect, and we'll give you a "Teacher Time" minute for that, and then we'll share with you what we thought.

[Video begins]

Woman No. 1: So I need a recorder to come up here. Let's see. Jahas, come on up. Will you count how many squares it went? One, two, three.

Jahas: Four.

Woman No. 1: Oh, Jahas, slow down so everybody can count with you. Ready? One, two, three, four, five! So we're going to use five of these little Post-its right on the foil. So one, two, three, four, five. Put five of them on. There's one. There is two. There is three. There is four, and there is ...

Child No. 1: Five.

Woman No. 1: Five.

[Video ends]

Judi: I hope you love that video as much as I did. I think it's really special, what those children are exploring and how the teacher supports them. So take a "Teacher Time" minute to write down in box one of your viewer's guide what you observed the teacher using to support the children's use of technology, and when we come back, we'll share with you what we thought.

[Music]

OK, so I hope you wrote down a couple of things that you noticed. Here is what we saw, and see if you observe some of the same things.

We saw the teacher using a ramp made of foil used to move the block from one place to another. We saw them use colored squares to measure how far the block went. There were Post-it Notes to help them tally the number of spaces the block rolled, and then they also used a graphing chart to compare how far the block rolled for different ramp surfaces.

Treshawn: I just love that video. The way the teacher used Post-it Notes is such a creative way to gather data. As adults, we may use a ruler to measure, or Excel software to make a chart or a spreadsheet, but, you know, this is where it all begins, with using simple tools that will lead to the use of more complex tools.

So let's take a few minutes to think about how you can support technology learning with the preschoolers in your program. Each episode this season, we're sharing strategies to support three major components of what you do each day to foster children's exploration of STEAM concepts. First, we're creating engaging learning environments, then we'll provide nurturing, responsive, and effective interactions, and then finally, we'll offer engaging learning experiences and opportunities.

Judi: OK, so let's start by talking about engaging environments. If you were with us last episode, you'll remember that we talked about the materials that you provide for children in a couple of different ways. First, you want to make sure that your materials are open-ended whenever possible. This means children have the opportunity to use the materials in the way that interests them and according to their own ideas.

Second, you want to have a variety of materials. Make sure there are lots of different options for children to explore, and third, you want to make sure that your materials are accessible to

all of the children that you're working with. So let's start with open-ended. This one is a little challenging when it comes to technology because when we think of open-ended materials, usually we think about materials that children can kind of manipulate or use in any way that they want, but with technology, some tools are designed to serve one particular purpose or solve one particular problem, and so children are still learning what tools can and cannot be used for.

They're thinking about and exploring cause and effect, so some tools have one cause and one effect, so for example, squeezing scissors has kind of one result, which is cutting something, but if you think about what a child is still learning about scissors, they may know this scissor is going to cut this paper. "Yep. I wonder if it'll cut this marker. Hmm. Nope. I can't use this technology to cut a marker."

So even if this material isn't necessarily open-ended, what we're allowing the child to do is open-ended in exploring how this tool can be used. They're also trying to discover how changes in some materials can affect other changes. So cause and effect, right? So we saw in that example in the video using ramps.

You can change a ramp by raising it up to make something go faster, so that's a cause and effect that a child is able to impact by changes in the way that they raise and lower the ramp, so this is one way that they're going to explore. They'll try to use materials in ways that we never thought about to accomplish their goals, and that's OK. This is how children learn about technology and what the tools can be used for.

Treshawn: That's right. Not only do engaging environments include open-ended materials, but there should also be a wide variety of materials to explore as well. Pay close attention to children's interests and give them some interesting tools to use to support their more complex explorations. For example, children interested in music might want to use a CD player or a tablet to listen to or create their own music in addition to the musical instruments that you already have in your learning environment.

Variety can also mean including materials that represent the children and families in your program. For example, you can ask families to share some familiar tools from home, such as chopsticks or a molcajete that is used for grinding. When children have access to materials they're familiar with, they'll feel more confident and more comfortable about exploring in their environments.

And while we did mention at the beginning that technology in preschool is not always about tablets and digital cameras and computers, it's important to recognize that children are surrounded by these digital tools, but we can use these tools to support their learning. For example, we use computers or our smartphones almost every day to investigate and learn about things that we're curious about, and we can model that for children to respond to their curiosity and expand their exploration beyond the classroom, building their knowledge about the world.

We also know that children are used to having their pictures and videos taken, so we can use this for our ongoing assessment purposes and encourage families to do the same at home. You can also encourage children to document their own work, for example, like taking pictures of

the block towers that they've built or things that they've created in the art area using clay or paint or using video to record their descriptions of how they built something or a new discovery that they've made, and remember if you plan to use this kind of technology in your program, just remember to review your program's specific policies related to using digital technology.

Judi: These are great tips, Treshawn, and I agree. I think using video and photos is really helpful although I'll tell you, if I ever try to video my kids doing something interesting, they instantly, like, turn to the camera like it's a show, so you might have to do some stealth videoing or stealth picture-taking.

My 5 year old hides from the camera if he sees me trying to take a picture, but I do think that video and photos are great technologies for us as teachers to use, but let's not forget that children can also use them as well to document their learning and what they understand and how they're exploring technology.

Finally, we want to make sure that all of the materials that we provide for children are accessible and usable as independently as possible, so this might mean adapting some materials so that all of your children can participate. So for example, during technology-related explorations, you might need to adapt writing materials like a marker with an enhanced foam grip. You might want to offer scissors, different types of scissors so that every child, no matter their fine skill, can be successful in using that tool, that technology.

You might have a child who has a speech impairment. That child could benefit from using a high-tech voice-output device. These are all examples of assistive technology, and they help all of the children that we work with successfully and independently explore technology ideas.

Treshawn: These are all great points, Judi. So now we're going to watch a video, and if you were with us during our science episode, we watched a part of this video, but we observed Rodrigo using the scientific-inquiry cycle. Today, we're going to shift the focus of our observation to look at the types of materials that this teacher has provided to support the children in this classroom in learning about technology. As you watch, look for some of these open-ended, varied, and accessible materials. Go ahead. Let's watch.

[Video begins]

Woman No. 2: Do you think you're going to go ... Do you think you're going to get stuck?

Child No. 2: No.

Woman No. 2: Do you think it's stuck?

Child No. 2: Nope.

Woman No. 2: Nope. Why? Why? Why didn't it get stuck? Because it's high up in the air maybe?

[Children talking]

Child No. 3: Is it going fast?

Woman No. 2: Is it going fast? Let me see.

Child No. 3: They're all go fast.

Woman No. 2: How do you get it to go fast?

[Children talking]

Woman No. 2: Let's see. OK. Yay.

Child No. 2: I got that one.

Woman No. 2: Can I go watch Santiago? Here, I'm going to trade with you. Here, Alicia. Help them. Let me see.

[Children talking]

Woman No. 2: OK. Let me see. Show me how to do that. OK. Ready? Uh-oh. What happened? Are you going to ...

[Inaudible]

[Children talking]

[Video ends]

Treshawn: What a great video of a preschooler using technology. So now it's your turn to use some technology. We're going to use the ideas widget; it's that yellow widget below with the light bulb, so go ahead and click on that and then tell us some of your favorite open-ended, varied, and accessible materials that support technology, and then in box two of your viewer's guide, write down some ideas that you'd like to try that you've heard some other people share.

Also, as you're working on this, we're going to share what we observed from the video, too. So in this video, there was such a variety of materials to play with, and all the materials were open-ended, such as the tubes and the cement truck and the marbles, and, you know, there wasn't really one way to play with these materials, so they really sparked creativity and problem-solving with the children, and if you noticed, all the materials were accessible, they were on the ground, and that's a way to be accessible to all children, and there were enough materials so that multiple children could explore comfortably, and children of all abilities could explore the materials independently.

Judi: Well, I hope you were able to brainstorm some ideas about how you can create even more engaging learning environments that support children in exploring technology ideas. That video is a great transition into our next topic. It's wonderful to have interesting and engaging environments, but it's also important to make sure that we give children support and encouragement and observe and respond to their interests and ideas.

This requires nurturing responsive and effective interactions throughout the day, indoors and outdoors, and during your activities and routines. Nurturing means that you show interest in and are supporting children's curiosity. Responsive means that you use back-and-forth conversations in response to children's questions and ideas, and then finally, interactions are effective when they support children's development and learning across the ELOF domains.

Treshawn: That's right. So there are a few strategies that you can use that will support you in being nurturing, responsive, and effective in your daily interactions with children. The first way is by scaffolding, and then we support children in using the inquiry cycle. Next, we speak

technology and encourage children to speak technology, and then finally, we listen to children's questions and model a questioning mind ourselves.

So let's start with scaffolding. If you were here with us for our last episode, you'll remember that scaffolding means offering just the right amount of support and structuring the environment and your interactions so that children can be successful, and, you know, this requires some close observation and listening and understanding where children are now and where they're headed next, so it's important to watch and listen first to see what children are able to do on their own because research shows that when we allow time for children to explore on their own, this promotes their curiosity, and it keeps them engaged much longer than when adults just give directions.

So if you look at our examples here of scaffolding on the slides, you'll see a child exploring scissors as a tool but may need some support to accomplish the task, and then there's a child learning to use a glue stick as a tool to stick things together, and then finally, you'll see the teacher providing support for a child exploring how to use a tube to move a marble from one place to another. These are all great ways for scaffolding.

Judi: That's right, and another way of supporting nurturing and responsive and effective interactions is to use the inquiry cycle and to encourage children to engage in the inquiry cycle as well. You can encourage children to ask questions about the tools that they're using, their ideas, and their hypotheses.

So for example, you could ask a child, "Why do you think a light shines through some objects on the light table and not others?" Or you can talk to children about what kind of tools they can use to do certain things like serving themselves some food. Allow children to guess and explain their thinking. Questions like these can help children notice the relationships between something they want to do and a tool that will help them do it.

If you work with children who are dual language learners, you can maybe learn a few key questions in each child's home language, like, "What do you think will happen next?" or, "What do you see?" or, "What do you observe?" This will encourage them to continue exploring and making observations. In this case, children can respond by talking to their same-language peers or into a video for later translation, or they can even maybe draw some of their ideas on paper. The goal is to engage children and encourage them to explore no matter what language they're speaking. So let's take a minute to watch a video.

Look for ways that this teacher provides scaffolds for children and encourages them to use the inquiry cycle.

[Video begins]

Woman No. 4: Which one is going to faster, the marble or the car?

Child No. 4: The marble.

Woman No. 4: Why do you think that?

Child No. 4: Because I tried it out on there, and it went faster.

Woman No. 4: Should we try it?

Child No. 4: Yeah.

Woman No. 4: OK, ready? One, two, three. Whoa. Which one came out faster?

Child No. 4: Three.

Woman No. 4: I'm going to roll these down and hit the cup. Which one do you think is going to make the cup go farther, the marble or the car? The car? Why do you think that? Why do you think that? Pero por que?

Child No. 5: Goes faster.

Woman No. 4: You think because it goes faster? Who wants to try the car?

Child No. 5: Me.

Woman No. 4: OK. Put the car up here and then let it go. OK, so it went there. OK. It went here, OK? So let's measure that. Let's see how far that is. Right here, ready? Can you pull it out for me? So that is how many inches?

[Video ends]

Judi: That was wonderful. Did you notice that she also used a few other strategies? She spoke technology, and she modeled a questioning mind.

Treshawn: Yeah, Judi, she really did speak technology, and just like this example, we want to make sure that we're speaking technology and using technology-related language throughout the day with children.

Think of this as using the specific names of tools and talking about how they work and how they're used. For example, you might ask children how they think something works like the lid on a trash can when you step on the pedal, and for children who are dual language learners, ask parents to teach you some words or phrases from the child's home language so that you can communicate with them as well, and for children with hearing impairments and speech delays, you might use sign language to communicate or even pictures to name the tools and their uses.

Talk with families about how they communicate with their children at home and use some of these strategies in your setting as well, and remember children who use communication devices and wheelchairs and walkers, well, those are all technology, so make sure to name these devices and equipment and describe what they do and how they help children. The use of language extends and enriches technology experiences and growth and knowledge about the world around them.

Judi: That's right. We want to model vocabulary for our children so that they can begin to use it too, and as important as it is to speak technology, it's also just as important to listen to how children are talking about their problem-solving, their use of tools, their understanding of the use of tools, so listen to children and model a questioning mind.

They may be trying to find ways to use tools to — like tape or glue or clips to hold down their artwork outside when it's windy. You can wonder with children and ask for their ideas about how to solve a problem or how to use tools to solve a problem. "How did you do that? How did

you figure that out?" or, "If you can't figure it out, I wonder if we can figure out a solution together."

That's my favorite thing to do with my son when he asks me how to accomplish something. I'll always turn it around, and I'll say, "Well, I don't know. What do you think? Let's see if we can figure that out together." Ask questions together. Listen to and validate children's ideas. Even if you know the scissors are not going to cut into that particular thing, go ahead and let them try. They will learn something through that process. Be curious and explore together.

Treshawn: When you think of technology, you may not immediately think of computer programming, which requires a coding language, but those codes are based on patterns, so activities that encourage pattern recognition can support future technology skills. Who'd have thought? So let's watch a video of a teacher and a preschooler creating a pattern with blocks. Pay close attention to the way this teacher scaffolds, supports inquiry skills, speaks technology, and encourages this child to communicate. Let's watch.

[Video begins]

Woman No. 5: Oh, Senaya, I see what you're doing. You're trying to make a pattern here, aren't you? You started with the black, right?

Senaya: Black, green, black, green.

Woman No. 5: Uh-oh. What comes next in that spot? Let's get some choices here. What do you think comes next? You figured it out. I didn't even have to say them. What's your pattern here?

Senaya: Green. Black.

Woman No. 5: Black.

Senaya: Green, green, black, green, green, black, green, black.

Woman No. 5: Green, black. You did it! Good pattern.

[Video ends]

Treshawn: We love watching the nurturing, responsive, and effective interactions in this video, so now we're going to give you another "Teacher Time" minute to write down in box three of your viewer's guide your thoughts on the way this teacher supported the use of technology to make patterns. Go ahead. Take a minute.

[Music]

Time is up. I hope you had some time to reflect. Well, here is what we saw in this video. So the teacher scaffolded the child's learning by pointing with her as she said the patterns, and she provided her with a choice to help her think about how to complete the pattern. She really supported this child's use of the inquiry cycle by asking questions like, "What color do you think comes next?"

And she invited the child to communicate by saying the patterns out loud as she was going along. Preschoolers are really at this right stage for understanding and creating more complex patterns, so giving them the opportunity to create and extend their own patterns is a great way to support technology thinking.

Judi: OK, so the last step that we're going to talk about today in supporting technology thinking for preschoolers is to provide technology-related experiences and learning opportunities. These opportunities can happen naturally just like we saw in the previous video, and we also know that one of the best ways to support children's learning, vocabulary, and understanding of the world outside of their learning environment is to read books. You can go anywhere. There are so many wonderful children's books that can be used to support young children in learning about technology.

So as we mentioned at the beginning, Gail Joseph sent me on a field trip to my local library to find some of these technology-book gems. I made a video to show you what I found. Use box four of your viewer's guide to write down some of the books you'd like to add to your learning environment, and also you'll find in the resource widget a list of the books that I talk about there. Let's see what I found.

[Video begins]

Hi, everyone. So I'm here at my local library, and I brought my list of books with me that Gail recommended, and I asked my librarian to help me find them. So I have a stack to share with you. Also, I just wanted to let you know that not all of the books that I was looking for were in my library, but I was able to work with our intra-library loan to get the books that I was looking for, so my librarian helped me do that.

That's just a tip for you, so if you don't have books in your library, always ask to see if there's a sharing program so that you can find other books. Another library sent their book over to me here, and I picked it up here at the library, so I have lots more options. Before we get into the books, I wanted to remind you about Gail's strategy for using books with children, and that's to take some LAB notes.

So the L stands for learning, so think about the books that you have and what concepts the children will be learning as you go through the stories, and today, all of our books, the concepts children will be learning will be about technology. Second, A is about advanced vocabulary, so make sure that you flip through the book before you read it with the children and highlight any words or remember any words that you might find interesting or the children might find interesting that are new vocabulary for them.

And then finally the B — the B is about going beyond the book, so think about and plan for materials in your program and your classroom and learning opportunities that you can provide indoors and outdoors to help children explore the concepts that they're learning about in these books. So that's you're LAB notes, and I'll talk a little bit about those as we go through the books. So first we have "Dave's Rock."

This is a fun book. It's a really cute little story about these two men who find some rocks, and then we start to think about what they can actually do with the rocks, and it starts out a little bit competitive. They are competing with each other who has the better rock, but what ends up happening is they work together, and once they start working together, they actually make a leap for mankind and discover the wheel.

So this is a great way of talking to children about using tools, but also they use tools to create the new tool, which is a wheel. And then also we want to remember that science is all about working together, and so this is collaboration of scientists at the earliest time, and they work together and created something new, discovered something new. The next book I have for you is called "A Stick Until ... "

This is another book about simple tools. This is about using a stick, so it shows different ways that animals use sticks. It's a stick until it's a spoon. The stick is a spoon until it's bait and so on, and then we go all the way to a dog using a stick and then people. Children are using the stick to dig a hole and to hold up a plant, so again, it's a nice evolution of how just something very simple can be used as a tool by animals and by humans. And thinking about going beyond the book, how much fun would it be to have your kids think about what a stick could be? And you could even create your own book together about all of your ideas. OK, and then next we have, "What Do Wheels Do All Day?"

I love this because wheels are something that preschoolers really love, they love to think about, and this book is just full of different ways that wheels can be used to move us through the world, to move things through the world, people, and it has a little bit of rhyming in it, which is always fun, so you have that rhythmic aspect to it, and it has some great vocabulary, too. So think about that advanced vocabulary. "Sometimes, wheels spit and sputter," just fun words to say, and then, again, going beyond the book, think about the wheels that you have in your learning environment, the wheels that children use every day, either in your dramatic play area. Maybe you have some toy cars and trucks outside.

You might have trikes or wagons. Think about how you can use wheels every day to solve problems or to accomplish tasks. And then the last one I have I love. This is called, "How to Code a Sandcastle." I love this because I grew up building sandcastles on the beach as a girl, but it also has some really great coding language in it, which is a great introduction for children who are thinking about coding, and also just about one of the words or concepts they cover here, sequencing, which is something that I'm sure you and your children are exploring.

So there's a, first, you have to do this, and then next you do this, and third you do this, all as a way to build a sandcastle, and then also some other coding language that comes in here is if-then-else. So for example, "If the item you see is small and doesn't move and doesn't belong to anyone, then bring the item back to the castle, else find something different."

So it's a fun story about building a sandcastle, but it also incorporates coding language, which is a fun way for kids to think about problem-solving, creating things, making things work. It's a good introduction to coding, and it's fun because there's a robot, and there's sandcastles. So those are the books that I have for you. The titles and authors are all in the resources widget, so you can find them there. I'd love for you to tell us in the "Teacher Time" community on MyPeers if you have other books that you use to support technology thinking, and I hope you find these useful, and thanks to Gail for suggesting them.

[Video ends]

Treshawn: Oh, my goodness, Judi, that was so much fun. I just love taking trips to the library with my children. You can't beat free books. So I hope you all have some new inspiration for

using books in your programs to support children's knowledge of technology concepts. I know I sure do. So now let's take a minute to think about how technology and the arts work together. Art and technology exploration can happen in your art center, anywhere in the classroom, or even outdoors.

You can use leaves and sticks as tools to paint with or use different shovels or buckets to make sculptures with wet sand. The arts really open up the door for children's imagination and supports problem-solving, reasoning, and creativity. Think about what parts of the inquiry cycle children use as they figure out what tools they want to paint with, like using a paintbrush or a sponge, or what tools they need to spread out their Play-Doh figure. So we're going to watch one last video of children using a stencil to trace onto paper. As you watch, use box five of your viewer's guide and write down some ways that you'd like to connect the arts and technology in your learning environments.

[Video begins]

Man No. 1: This is different because you have to trace around it, so how can we keep this on here? I need some ideas. What do you think? How can we get this to stay on there? But we can't put tape on the outside. How can we do it? Put it on the inside? I have a neat trick that I'll show you. I have a neat trick that I'll show you, but I'll need you guys to say dun-dun-dun-dun. Here it goes. I got this. There you go.

You're helping me out there. See, I'll put it like this, and now it's sticky all the way around, and I'll put it right on his nose. Watch this. This is really cool. Can I get a dun-dun-dun-dun-dun? Thank you, and then I'll put one on his hand — put it on his other hand. Dun-dun-dun-dun-dun. Maybe I'll put one on his toe-toes.

Yep. Got it right here. Grab another one. Rip it off. Dun-dun-dun-dun-dun. I'll let you put this on, and I'll hold it for you, OK? That way, you can put it wherever you want it. Right in the middle. There you go. You did it. We did it. Finger bumps.

Boop.

Thank you for your ideas. Boop. There you go. Now you can get your marker and go around, OK? Hey, Riley. Remember your idea to put the tape on there? It worked. Your idea worked! Look. She did it, and she took it off, and there's her teddy bear. It worked.

Child No. 6: That's good, Riley.

Man No. 1: It is. It's a good idea. You had a good idea, Riley. Hey, finger bumps on your idea. Boop.

[Video ends]

Treshawn: Wasn't that a great way to use technology to figure out the art project? The teacher identified the problem of how to make the tracing bear stick, and then he asked the children for suggestions. He also helped the children problem-solve by showing them that it would be kind of hard to trace around the bear with tape on the outside, and the one child had the idea to put tape on the inside, so the teacher scaffolded by showing them how to roll up the tape and put it onto the back of the bear to help it stick, and last, the teacher allowed the child to place the

bear down on her paper all by herself, allowing for some creativity, and in the last part of the video, the teacher really validated the child's idea to use the tape on the inside. I know I would feel so good about my ideas in that kind of learning environment. What a great way to show the arts and technology together. Finger bump.

Boop.

Judi: That is such a great video, and what a great way to end our episode today. We've covered a lot, so just quickly, let's review the three main ways that we offered to support children's exploration of technology concepts. First, I want to encourage you as preschool teachers and family child care providers to think about the intentionality behind the resources that you provide for children: engaging environments that offer lots of different materials that allow them to explore how tools work.

Secondly, offer those nurturing, responsive, and effective interactions. Listen to the children, watch them, and then respond to their interests and ideas, and remember, model that questioning mind. "I don't know. This is an interesting problem. Maybe we can figure this out together." And finally, offering those learning experiences, learning opportunities that will broaden children's understanding of technology.

Today we talked about books, but think about the ways that you can go from those books into your rooms, like your classrooms and your learning environments, to help children explore the technology concepts that they experience and that they read about in the books that you read together. When you do this, you support children's development in all of the ELOF domains, and you are building the foundation for a lifetime of technology, exploration, and learning. So thank you so much for joining us today.

We're so glad you stuck with us. We hope you enjoyed it. Before we end, we're going to leave you with some resources that are going to support you as you engage with the little scientists in your programs.

Treshawn: OK. Great. So on the ECLKC, there are two resources that we'd like to highlight. The first is the STEAM interactive PDF, and the second is the STEAM 15-minute in-service suite. These resources provide a overview of the STEAM components and share ways to engage children, birth to age 5, in STEAM concepts and materials.

Both resources also offer strategies for supporting families in getting excited about exploring technology at home, so we encourage you to take a look and learn more about STEAM. Next is MyPeers, and 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 MyPeers already, you should. It's free, and you can join via the ECLKC. There'll also be a link to join following this webinar.

You'll find us there in our "Teacher Time" community, and there, we'll be posting more videos and sharing strategies related to supporting the little scientists in your programs. We've also posted the STEAM celebration box materials on MyPeers, so be sure to check that out as well. There are currently 58 open communities on MyPeers with over 10,000 members. So in addition to "Teacher Time," you might find some other interesting communities to join.

We've created a handout for you in the green resource-list widget that highlights some relevant communities that you may want to join. One community, in particular, is the Culturally and Linguistically Responsive Practices community in MyPeers, and they'll be hosting their Dual Language Learner Celebration Week in February. We're so excited about that, so be sure to join this community to share ideas and get resources and sign up for their DLL Celebration Week e-learning experience. You can't miss that. Let's support the use of children's home language in all learning environments.

Judi: Wow, that's so exciting. I cannot wait to see what that Dual Language Learner Celebration Week is going to be like. Well, and since we're talking about technology today, let's not forget the ELOF2GO app. This app helps you learn more about the ELOF. It gives you on-the-go access to the ELOF goals for children and provides you with effective teaching practices to support their growth and development, and another tool that you can use is our Ready Dual Language Learners app, or Ready DLL. It's now in our app store.

If you work with children who are dual language learners, in this app, you can access resources. You can learn key words and phrases; remember we offered that as a strategy. And you can discover implementation strategies right from your smartphone. Our next "Teacher Time" is going to be in February, and hopefully you'll join us for that. It's going to be ...

We're going to be talking about exploring engineering with infants and toddlers and definitely you'll want to make sure to mark on your calendars in March we'll be back with our preschool episode on that same topic. Remember to download any helpful resources from that green resources widget and have a great rest of your day. We hope to see you next time.

Treshawn: Yes, this has been so much fun. Thanks, guys. Please remember to fill out your evaluation and please do come join us in the MyPeers "Teacher Time" community. We'd love to hear more about what you're doing to support STEAM thinking and learning with the preschoolers in your program. So until next time, bye!