

Christina Tondevold: Thanks for joining us for Debbie Diller's session. We're doing this one a little bit different. We are doing this interview style, so we posed some questions on Facebook, to our Facebook groups, and we got some questions about what people are wondering about Math Work Stations. I get the honor of asking those questions to Debbie, and we get to learn from Debbie for the next 45 minutes to an hour or so. I hope that you enjoy this information about Math Work Stations. If you don't know Debbie, you should. You got to look her up. Just Google "Debbie Diller." She's got a wonderful website with lots of info.

She has authored a ton of books for Stenhouse, including ones about work stations, math and literacy work stations. Debbie has been in education for over 40 years, and she has taught from pre-K up to 10th grade. She really does strive to be a 21st century teacher. When you go and Google her, you'll also find information through Stenhouse about online stuff that she does. She has a Moving Into Math Stations video that you can get through Stenhouse, and she is also doing an online workshop all about growing independent learners. I know that one is literacy based, but hey, we're elementary people. We got to do it all.

Check her out. She has a ton of stuff out there. I am going to stop talking and start with those interview questions, because I can't wait to learn from Debbie. The first question we have for you, Debbie, is really how did you get started into doing work stations?

Debbie Diller: I really started playing with literacy stations probably 40 years ago. I began in the literacy world because it was where I was a little bit more comfortable. Those of you that are really more comfortable with math, start with math stations. You have to have an entry point to dig in. I began working with literacy stations because we were trying to figure out what to do with the rest of the class while we work with a small group. We know that whole group instruction by itself is just not enough.

Now, I will admit, when I was a classroom teacher, I was not comfortable with this idea of math stations. I didn't really know that much about them. I was struggling trying to teach math whole group. I just wasn't engaging my kids. This is a long time ago. What I'm finding is that what I learned about literacy transfers very, very nicely to math stations. About 10 years ago, I started playing with math stations, because teachers asked me to. I like to put myself out there and spend as much time in classrooms as possible, which I hope that you will as educators as well. Take some things that you feel comfortable with, that you're already teaching, and begin with that. Just start with one station at a time and grow them over time, which we'll talk a little bit more about as we go.

Christina Tondevold: That does lead us into that next question very nicely, about I remember a post in particular from a teacher saying, "My principal has said we are doing math stations. Anybody got any help? Because I don't even know where to start." If you can give some info on just how do you start? Give us an overview of how you do them and why. Why should we be doing those math stations?

Debbie Diller:

Let me start with the why. "Why" is my favorite word, and if I can't figure out why, then it's not worth doing it. For me, the why is, it's all about engagement of students. Kids can't sit in whole group for minutes and minutes and minutes on end. They tune out after a time. I think whole group is important. It's a good way to give some information to all kids, to share and to do some teaching, but what I found is that has to be limited. I know, too, that we can't meet everyone's needs in whole group, so small group instruction can be more targeted to really intervene with children that need this or that.

I saw a lot of teachers, when they were trying to start small groups, it's like, "What do I do with the rest of class for math?" They might have them doing math worksheets. Well, if you watch kids doing math worksheets, they're not very exciting. A lot of kids are yawning, they're falling out of their seats, they're slopping through it to get done. Some teachers I worked with said, "When you finish your work, then you can go to station." I didn't find that worked so well, because kids were slopping through their work because they really wanted the hands-on engagement at the stations.

The why would be to engage your kids in something that they can be successful with, that's not just paper and pencil oriented, which I know helps to develop conceptions. I know that helps to develop concepts and that conceptual understanding for our children is so important no matter what the grade level. To get started, start off with [crosstalk 00:04:52].

Christina Tondevold:

There's a lot. We've got to get kids engaged, and through ... I remember, my schooling was just paper pencil. We did it because we were told to, and now kids aren't doing that so much. We've got to find better ways to keep them engaged. I appreciate that.

Debbie Diller:

That's the why. Now, the how. Surprisingly, what I found was really important to begin with was the space, and thinking about where you're going to put these things. It might sound like a very small detail, but it's one that makes a big difference, because it helps with the organization, which will help kids get more focused. Typically, what we do is we start with planning. I think planning with a team is the most important thing to do. If you're an individual teacher, no one else teaches at your grade level, you do have online communities. Like the wonderful one that Christine has set up and ones I'm working on, I'm trying to set up as well right now.

Find somebody that you can plan with. The way I look at planning is I look at, what's the concept for teaching and how will we be teaching that? Whatever we're using to teach it, I think how can we have kids do that with a partner? Kids like to work with a partner. It's a lot more interesting than working alone. Also, they can get feedback from their partners. That's really how I get started. I think about what kinds of activities I want kids to be practicing based upon what I've taught them, and then I think about a place to house all of that stuff.

Most teachers talk to me about how they don't have any space in their classrooms, so I find, again, planning is the starting point. Planning for a

small area in your classroom. It can be shelves, it can be a countertop. I like to put the math stations in clear plastic containers if possible, especially with lids if you work with younger children. I have to explain the lids. You probably can figure that out if you work with little kids. I number the stations. I put a numeral on the front of each of them. I do have kids work in pairs, because I find that they're much more highly engaged working in pairs than they are in groups of four or five. If there's only two of you, it's easier to have a conversation. It's easier to stay focused. It's actually easier to do some work. If there's four or five kids, you have somebody sitting back, watching everybody else do it.

I think about how many containers I need. Don't worry, I know this is math. You're probably doing the math already. You can duplicate stations. Think about having containers so you have enough things set up for pairs to do work. Then put numbers on the front of those, have a spot that you keep them. I usually put them in numerical order if this is math.

Then I think about spaces around the room where we can put those things, where the kids can carry them, it must be portable. I found that numbering spaces around the room is really important, because it gives the children a system to follow rather than kids saying, "Oh, let's go here. Let's go there." Then they end up on top of each other, and it gets really loud. If you have your kids spaced out around the room and you've thought about that ahead of time, it can really help with noise and have the room feel more manageable so that you can teach in a small group if you choose to, and also so kids can be more focused during that time.

Christina Tondevold: I know that the biggest concern, and this seemed to be reiterated through the Facebook group, is the accountability. It's hard when we let kids go off on their own, and we aren't right there knowing what they're learning and if they're getting it. How do we help hold them accountable and yet still have fun? Like you said, I don't want just paper and pencil stuff over there, because that's not fun for them. Having that balance between the fun but also knowing that they're getting some math learning and understanding those concepts, how do we do that?

Debbie Diller: Well, there's a number of ways to do that. The very first thing that I found with accountability is that it begins with the teacher. If we are expecting our students to go off and do something independently, we sure as heck better make sure that we set it up so that they can be successful. It's not really fair to say, "Well, if kids fill this out, this paper out, then that'll show me that they really knew what to do." I really found we have to look at our own teaching first. That is accountability step number one. Look in the mirror, look at your own teaching and say, "Have I taught this well enough to release control for kids to now try to do it on their own?" You do have to have some background knowledge in order to be successful.

Another piece is to look at the partners. I believe that it's important for the teacher to think about pairing students that can work together. The first and foremost thing I look at is can these kids work well together? If they don't work well together, don't put them together. It's just not going to be a good match. I get a lot of questions about, "Should I put

kids that are more advanced in their mathematical thinking with kids that are struggling?" It's really up to you as the teacher, but I would be very cautious to make sure that you have kids that aren't too far above each other, because what'll happen is they usually both get frustrated.

Many times, we look at getting along with each other as well as the level of mathematics the kids are at, at that particular concept that we're teaching and having them practice. Many times at about the same level actually do really well together. Now, another piece of accountability other than being with somebody that you can talk with and help each other is small group time. During your small group time, you can have kids that are about the same mathematical level working together, or you can choose to have kids at different levels, depending on the activity that you're doing in that small group.

I've seen people do it both ways successfully. Probably for most people just starting out, beginning with kids at about the same level seems a little easier to manage in small group, and thus if you have those kids in partners with somebody from their group, it's a little bit easier as far as management goes. That second piece would be that partner piece. The third part of accountability would be small group time is a time to check in. See, are the kids improving in what it is that we've been learning.

Another piece of accountability is at the end of stations, I have what I call a sharing time or a reflection time. If you want to really improve what's happening during stations for math, look, number one, at the teaching you've done. Then number two, look at are you having some time to come back as a whole group and reflect as a community? I ask very simple questions. I have outlined these in the back of my Math Work Stations book.

I even have cards the teacher can put on a ring if you want to. They're things like, "What did I learn at math stations today?" "Did I have a problem at math stations and how did we solve it together?" Those kinds of things. It gives some children a chance to share back. You don't have to have every kid share, because you'll run out of time. They could do partner sharing or you can call on maybe, "Who was at math stations number one today? You guys were working with fractions. Tell us about some of the work that you did there." That's another accountability piece.

One more ... I've done a lot of thinking about this particular question, because I get it a lot. Another piece of accountability is to use what I call math talk cards. Math talk cards, I've written about them in Math Work Stations book. There are some samples there. I made a few this morning to show you. All you need is some paper and some colored markers. I use black and a color, usually. I'll show you a sample right here. This one says, "I have blank. I need blank more to have 10."

If the students were playing a game, let's say they were working with 10 frames, and they were rolling a dice and they got the number three. They put three cubes on their 10 frame. They would take turns. One child would say, "I have three. I need seven more to have 10." Then the

next child might roll the dice and get two. That child might put two on his 10 frame, and then he would say, "I have two. I need eight more to have 10." They would continue in that vein until they got 10. Then they would take the cubes off and start all over again. I found that adding the math talk cards really helped with accountability, because it gave the kids some mathematical thinking to focus on.

You'll see that these are done just with black marker and a color. I've used the color just to highlight the mathematical vocabulary that I want kids using. For example, the word "more" here or the word "10." I have another example I can show also for [inaudible 00:13:44]. Here's another one that I might use with older students. "Blank is the multiple of blank, because the factors blank times blank equal the product." What we have found in our upper grade classrooms is sometimes our kids will say things like, "Oh, that. Let's times that," instead of using the word "factors" or "product." This, again, helps to focus students. I've found these math talk cards ... We often use them in whole group first or in small group as well before we put them in math stations. That pretty much sums up accountability. A lot of factors to think about.

Christina Tondevold: The one thing I did not hear you say once is a grade. Taking a grade.

Debbie Diller: No.

Christina Tondevold: When people talk about accountability, the number one thing that I get from them when you dig a little bit deeper is "Well, how do you grade this?" Should they be, or is that just not a time that you are grading things?

Debbie Diller: Thank you for asking that question. Another very common question I get. It seems like the higher the grade level that I'm working with, the more I get that question. Accountability is extremely important, but just making kids write something down doesn't make them learn it any more. I think that is sometimes kind of our old imprint that we have from the teaching that was done to us. What I found is that if you notice these cards, I'll show you again. I want you to see there's blanks here. I don't laminate them. I don't make these to last forever. Just use index cards or paper and a marker. Sometimes I make them right in front of the kids. If I find they're not doing the talk I want them to.

The blanks are for them to talk, not to write it down. I have found that if you give the kids this and then just say, "Fill it in," they're not having any conversations. What's also nice, these are really open-ended, so they can be used over and over and over again, which to me, I'm trying to develop the accountability of thinking and talking about math, not about writing it down.

Grading. I think just like planning for the space for stations, planning for what you're going to put into your stations, you need to also plan for grades. As a classroom teacher, I found sometimes I graded everything that they put their pencil and paper to, because I felt like, "Well, if I made them write it down, I better put a grade on it." I'm not a real big fan of, excuse me, let me just put this straight out there. I don't believe in taking grades at stations. The why for that is that I believe that

stations are for practice. If we grade everything kids practiced, I really think that we're dumbing down the grades.

I have found teachers have success if, again, you work as a team and plan for how are we going to get a grade on this particular concept, not on this station, but on this concept, that that's a really good place to begin. Plan for how you're going to take grades before you even start teaching the concept, and then go from there. That way stations won't get in the way. Stations are for practice.

Christina Tondevold: I like that. When you were saying that, plan how you're going to grade the concept, I know a lot of schools that I've been working with are moving towards that standards-based grading and are having a tough time with that transition. Just that statement right there, "Plan how you're going to grade that concept, not how you're just going to grade that child throughout the year."

Debbie Diller: Or that piece of paper.

Christina Tondevold: Yeah, yeah. You don't have to grade everything that they do, especially the practice. I love that. Thank you for that, because I know that is a huge question that people have. I think a little bit of that came through. This next question I'm kind of reading ahead a little bit of this next question, of how to provide feedback to students in a manageable way. Their statement actually was, they don't like putting out the answer key because they want students to try again, but we also don't want them getting the wrong answer over and over again without anyone there, right? How do you manage some of that feedback?

Debbie Diller: That's an interesting question, because when I was first working with math stations, I was trying to do it very much like I was working with literacy stations. One thing I found that was a little bit different with math is that I found it was really equally important to spend some time walking around the classroom, talking with kids during math stations as it was to pull a small group. In literacy during our guided reading time, we often have kids at stations and we're just small grouping away. We had that reflection time at the end, that sharing time which was helpful, but I'm really finding in math that I am learning just as much about children's understanding of concepts we're teaching by walking around during math stations, sitting down beside them, and having a conversation with them just for a couple of minutes.

Asking questions like, "Tell me about what you guys are thinking right now. Tell me more. Can you think of another way to get that answer? Can you think of another way to solve that?" I'm finding that that is a really important thing to do. I personally like walking around with a clipboard and index cards that are just attached to it or use the Confer app or whatever your method of taking notes is. If you would walk around during stations and have some interaction with kids, talking with them, and jot down some notes about what you're noticing. Then from that, plan for your small groups based upon your understanding.

You can give kids feedback in that way, that's sometimes a rather unconventional way to think about it. Another way is to just know that

sometimes, we're going to make mistakes. That's really hard for us to wrap our heads around, especially as math teachers, but part of learning is making some errors sometimes. I have found that many times kids will help each other [inaudible 00:20:10] their partners, as far as, "Hey man, that's not the right answer. Look. Do it like this." With our older students, sometimes as they are working through something at a math station, if they're playing a game and solving some problems, they might each have a dry erase board. They're both writing down their thinking on the dry erase board on their own and then they look at it together and they share their thinking. Sometimes they have just one dry erase board and they're working on it together and talking through it, which actually can be even more powerful.

As far as should you have an answer key, I don't know. It's not a horrible thing if you want to have something that they can use for feedback, but I think the important thing is for them to work together on something, not to be just sitting side by side doing your own thing. In that conversation they're having, they will provide some of their own feedback. Walk around, check in, and then know that you will be meeting with kids in small group as well. It's another time to check in and see, here's some of the same kinds of things you've been doing at stations and see how they do in that small group.

I find pretty much case by case. Looking at your station and then seeing how kids are interacting with it. Looking at, are there any supports or scaffolds we need to put here? Not necessarily an answer key, but something we've taught with that kids can use to get the answer. I'll give you a few examples. When students are working with, let's say they're working with counting by multiples, so they're counting by twos or counting by fives. I've found that having a number line or having a hundreds chart there for kids to use as support can be really helpful. That way you don't have to have a, like, "Oh my gosh, what if they do this wrong?" kind of a feeling, because you can use those tools that you have taught with as a support.

Looking, especially with our youngest kids, now, "Do I need to put out a number line? Do I need to add a hundreds chart here as a scaffold to have them be successful?" I remember one time working with older students, they were working on multiplication. Anybody out there with kids that need practice with multiplication facts in a meaningful, fun way? The kids were playing this game that we call Bazinga. Bazinga goes by a lot of other names, too. Basically they had a can, so a chip can that was covered, and there were popsicle sticks inside that had different multiplication facts on them. There were also some sticks in the can that said "Bazinga."

Students would take turns pulling out a stick, reading it back, and then telling the answer to the fact. If they got "Bazinga" then they had to lose some of their sticks. They loved that. Let's say that they were doing six times three. What we did is we had their partner have a multiplication table, so that if the child says six times three equals 17, their partner could check and say, "Let's look at the chart. Six times three is 18, let's look at it together." Having some kind of a tool there

beyond just an answer key, I found could be really helpful if it was a mathematic tool that we've been teaching with.

Christina Tondevold: Nice, I like that idea. It gives them a support for if they don't just know it, either, they've got a way, but also a way to reference and check to make sure they are doing it right. We got a lot of questions that pretty much boiled down to how do you manage the work stations? From, do you do them every day, do you do spiraling curriculum? Do you integrate science and language arts during your math work stations? All those little management type questions. I'll let you speak for a little bit about how to manage the work station time.

Debbie Diller: Again, as I started exploring math stations alongside literacy stations, I found at first that people that wanted to dabble in math stations would put a few math things. They might have one math station during their literacy time. What I found happening is that it was really not helping our kids develop mathematical understanding. That was just kind of like throwing it out there. It was a start but I don't think it was enough, so I have found teachers having more success having their math stations during their math block, and really focusing on the math concepts they're trying to get kids to develop. Having more a concentrated math focus during our math stations time.

What I found is that teachers that like teaching literacy better, they were trying to do both at the same time. They had more literacy stations. Teachers that like math better had more math stations, and maybe threw in a literacy one or two. Having that kind of block for math or STEM or STEAM, depending on what your school is doing these days, if you are a STEM or STEAM teacher, you might have a science station or two as well as some of the math stations. You might have ... "Definitely," not "might." You should include your technology, definitely integrate that as you use the resources that you have.

Some teachers are putting in some engineering kinds of things or a maker space during their math stations if that's a direction that their school or school system is going towards. This is really a very flexible structure. You can make it match whatever it is that you're teaching. If you are self-contained and you're trying to figure out how to fit it all in, I would recommend a language arts or literacy stations time and a separate math stations time, deciding, maybe putting science in both. Maybe putting some reading of science or writing about science in your literacy time, and then having more of the science that integrates with math particularly.

I know we have one station where the kids were working with estimating distances that a car would go if it went down a ramp. They were using little matchbox cars. That was one that fit so well with science and math, can't separate those two. I really think it's up to you, but I'd be careful about just throwing in a literacy one. Think about what your kids need. Look at your data, look at what you see about your students both informally and formally, and then go from there.

Christina Tondevold: I like that. Is this kind of a teacher preference thing, or do you have a system of ... Are they doing the stations every day, and should kids get

to every station every day? I think teachers feel that pressure of, "If I've got all these work stations, all the kids need to get to them every day."

Debbie Diller:

No. I'm just going to say no. It's too much. What I have found is that a variety of math stations will keep kids engaged over time. If you try to have them practice everything every day, you're going to lose your mind and they are too. I would rather have more focused, shorter amount of practice than trying to squish in everything every single day. I've found that, let's say I'm working in a classroom with 24 students.

I would have 12 math stations, so 12 containers with the numerals on them. If you have technology be some, you don't really need to have a container for those. I learned this the hard way. You have 12 stations and you have two that are technology, have 11 and 12 be technology so that you only need one to 10 for your numbered containers. One time I did this where I had number three was technology, and then I had this empty tub and it was like, "Why did I do that?" Just know, I have-

Christina Tondevold: Yeah, you were missing one of the numbers, that will drive you crazy.

Debbie Diller:

It will. I actually left it blank, and I made a key and everything. It was really silly. I put a picture of it in my math stations book I think, just to show people it's okay if you change your mind along the way with it. When you have your ... I totally forgot what I was talking about. I lost it. I was like, "Okay, where was I? I was on a roll." Oh, every day. Going to math stations every day. All of that.

If you have these 12 math stations and say two of them or even three of them are technology, I have found using a math stations management board is really helpful. Typically I use a pocket chart or something pocket chart like. We have kids' pictures with their names, and I have their pictures and their names on the left, and then on the right, I have the numbers of the stations they're going to. So, these two kids might be going to stations one and three. These two kids might be going to stations seven and 10. We kind of put the numbers on the board. We don't try to have them all go to every station every day. It takes too long. They'll go to two stations a day or sometimes three.

I find if you try to have them go to more than three in a row, it's like tic tac toe, they're out. It's too much. Typically, the teachers will set up the board. Look at your stations that you're sending the kids to, and think about, is this really what the child needs? If they don't, switch your little cards around and have them go somewhere else. Make sure that when you're sending them, it is something [inaudible 00:29:24]. That's the most important thing of all to remember. Not all stations during a day, just having them go to several.

Now, as far as should kids go to math stations every single day? My recommendation is that you set up a routine for going to math stations, so it does become part of what they do on a daily or almost every day basis. If you're thinking, "Well math stations, they sound like they would be fun, let's do them on Fridays." Don't even bother, because what'll happen is it'll be like recess. You don't really need that vibe in your classroom focused around math. You want kids to have fun, but I have

found if you can make it part of your daily routine, it's like going to gym. You say, "I'm going to go to the gym every day," and you get there three days a week, you feel pretty darn good about yourself. Strive to do it five days a week, and if you only have stations four days a week, trust me, the kids will say, "When are we doing math stations?" They love going to math stations.

Christina Tondevold: The more that you do it and the more you get into that routine, the easier it is for kids to manage themselves. That is that big thing of how do we help kids be independent learners when they're off on their own, and I like that. When you're only going to do it one day a week, they're going to think it's just playtime. It's kind of like when we bring out manipulatives only at certain points in time. They use them as toys and not as tools, but if they have access to them all the time, then they get used to it and learn how to act with them and use them to their fullest potential.

Debbie Diller: It's exactly the same principle.

Christina Tondevold: Just do it as much as you can, but the more the better.

Debbie Diller: Absolutely.

Christina Tondevold: Another big piece that a lot of teachers feel work stations are great for is helping to differentiate for different levels of kids, but a big question was, how to do that but in a way that doesn't cause tons more work for the teacher?

Debbie Diller: I'm all about working smarter, not harder. I've been using that phrase probably for 20 years. I'm all about simplifying whenever possible. What I find with differentiation, first of all, I think the place to differentiate is not at stations, to begin, but differentiate in a small group. When you're looking at how can I differentiate for my students, start with differentiate in your small group instruction time. Think about "What does this group need versus that group?" Then very simply, take something that you have taught in that small group for those particular children and put that in a Ziploc bag and put a colored dot on it, possibly, to match a color. I'm not into red because you got to stop because you're your so bad. Be thoughtful about colors, don't just make it green if you're really good.

Just having a colored dot or some kind of a ... Put the kids' names on it or whatever you want to do, and then take that thing from small group and put it in a station container that matches that concept that you're teaching. For example, if we were working with this one that I referenced earlier. "I have blank, I need blank more to have 10." You could have, if you differentiate your range of numbers, so for some kids it might be, especially in kindergarten, it might be five rather than 10. It might be 20 rather than 10 depending on the children. It could be 100 if you have, I'm not talking about kindergarten necessarily, but whatever your grade level is. Take the conversation card that you've adapted for that group, put it in a Ziploc bag with whatever materials they need. A 10 frame versus a five frame. Then just transfer it from small group to

that station time. That's one of the smartest things, simplest things to do.

Another thing to think about with differentiation is if there is a child that you know cannot be successful with that particular concept you have at that station, it's just for some reason, you've noticed, it's just so far above him, they probably have a foundational skill missing. Don't send them to that station. You will probably be tempted to put them with a "higher" kid who can help them. I can guarantee you, the higher kid will do it for them. That child may not necessarily take away any learning.

Be thoughtful about which stations you're sending kids to. When you look at differentiation, think about small group first before you think about stations. Then think about the range of numbers you are working with. Range of numbers is one of the simplest ways to differentiate within stations.

Christina Tondevold: I like being able to have more open-ended so that kids can put in numbers that work for them, that you don't have to create all those number sets.

Debbie Diller: If I can make a comment about what you just said, making them open-ended is extremely important for children to be successful. It will also save you a lot of time. When I go into classrooms and I see math stations, and I do this frequently. I spend most of my time in classrooms working with teachers in districts that have hired me to come in and support their teachers for short times. One of the things I find is that when teachers have these sheets, basically, that kids are filling out, that they have gotten from here or there, wherever, they're just closed-ended. There's one answer that you can put in here, and you're killing yourself having to make stuff over and over and over again.

I don't think it really helps kids be more open-ended as thinkers, either. It's just this one right answer and this one question. Another thing I see is the seasons. I love the seasons, too, but you don't have to make everything match the seasons. You're making yourself crazy. I say it's like starting in the fall with apples, it's like a gateway drug. They have the pumpkins in October, and they're going to have to have the turkeys in Thanksgiving. There's enough out there in the commercial world. Kids already know that the holiday is coming, so I would just say, make it easy on yourself and don't feel like you have to change everything for the season, either. It really isn't all that essential. It doesn't necessarily help the mathematical understanding.

Christina Tondevold: It doesn't. It makes it cute, but it doesn't necessarily help.

Debbie Diller: That's just a caution that I always give teachers. If your thought is, "Oh, that's so cute," run, because you're probably making yourself more work than you need to. I like the seasons, too. I'm not saying don't do anything that's related to seasons. Use seasons in your literacy, use it with your poetry, use it in your read alouds, but as far as math goes, it really doesn't need to match the seasons. Think about solitaire. People play solitaire over and over and over again. Your math stations are kind

of the same thing. Choose things that you think kids will enjoy doing over and over and over again. That's really how learning takes place. That's good practice.

Christina Tondevold: I like that, awesome. Another big question of ... I think we get this with everything. Not just work stations, but any time someone is trying to integrate something new, the number one question is how does it fit with whatever, whatever their math program is. Whether you're using Engage or whatever program you have, that's the number one question. Probably throughout this whole summit, as you're listening to other speakers, we're all asking ourselves, "How do I do this with whatever program I currently have?" Can you speak to that about math work stations?

Debbie Diller: I created math stations to be a flexible structure that can work regardless of the math program you have. Basically what math stations are is math stations are partner practice with materials and things you've already taught to students. They're really used for spiral review of things that you've been teaching, so kids don't forget about them. If you have any kind of work that comes with your math program that can be done as partner practice, for example if there are math games that come with your math program. Any kind of partner games are fabulous to use at math stations. Any kind of whole group work that you've done with them where you can have kids already work in partners, those kinds of things can just really be recycled into a math station.

I don't look for math stations. I recommend that you don't purchase math stations. Instead, look at what you've been teaching and the games that you've been teaching as part of developing conceptual understanding and use those for kids to practice what you've been teaching again and again.

Christina Tondevold: In addition to, because it's not like ... You can't be teaching in the work station, right? You've got to do that teaching and then add that in as that extra practice.

Debbie Diller: Instead of thinking of stations as being something that's more work for me to create, "Oh, now I have to think of all these stations ideas, too?" Think about what I've been teaching and how I've been teaching it in partners as part of my whole group or my small group time, and then those same activities, the same games, are just recycled into the station. I don't start with what stations can I teach? I start with first of all, what is my standard that I'm teaching to? Really making sure I understand what that standard is.

I've found that sometimes the stations kids are practicing, they don't even match the standards we've been teaching. First of all, looking at our understanding of the standards. Second of all, looking at how can I teach this so it'll be engaging in whole group or small group, and/or small group, and then how can I take those same things and then transfer those to stations? That makes the whole thing much simpler, and much more connected for our students.

Christina Tondevold: I think that leads us into the other question of how do you do this at particular grade levels? We had one that was, how do you do this with three-year-olds? Then, how do you do this with middle schoolers? Work stations can be used with all grade levels. Are there differences that we should be watching out for depending upon the age range of those kids?

Debbie Diller: I've worked with math stations across the grade levels. What I've found that was kind of surprising in a way was how similar it is from grade level to grade level. The structure's very much the same. What's different is the content. Now, there are always a few exceptions in our kind of polar ends. If you look at three-year-olds, for example, I have a three and a half year old granddaughter. Bless her heart, she's my little guinea pig. Of course we do math stations. What we do is we play math games together with manipulatives. Do I expect her to be able to go off on her own if she was in a class full of children and do this with a partner? No. She's three. Three-year-olds are still very egocentric. They are very much in parallel play, playing beside each other.

I find that some of the things we might do at math stations with four or five-year-olds, if we work with threes, would really be done more in a small group or one-on-one with another adult. Many of the things we do developmentally with our kids, for example counting. We play a lot of counting games together. She likes board games now, and so we'll play a board game together. Rolling the dice. She's subitizing. We're working with looking at the die, how many is that without having to count them? She can subitize to six. She's learned those patterns by just looking and remembering. Even with the three-year-old, if you can get them to sit still long enough, they certainly can do these kinds of things.

Usually at about age four ... Don't worry, I'm not going through every age level. Starting about age four is when we might be able to have, especially like between four and a half to five, children are going to be more able to work with a partner. I have seen some really amazing things with our four-year-olds at stations taking the thing we've taught in whole and small group. Again, more teacher walking around kind of checking in and seeing. A lot of this, too, is exploring manipulatives with three and four-year-olds and letting kids have that hands-on practice. They'll start sorting by themselves, you don't have to always teach every child to sort. They do that naturally. The brain is seeking patterns.

When I get into kindergarten and up, structure looks very much the same. We have partners around the classroom and numbered spaces. We are taking things that we've already taught and that's what they're practicing then. One thing I've noticed is when I get into, say, fifth, sixth, seventh, and eighth grade, sometimes I get a lot of pushback about, "Oh, stations, we don't do this with the kids." What I found is they like it a lot. They love working with partners. Their peer is the most important person in their life right now, so why not maximize it? They also want to talk all day, so why not just jump right in and let them talk, but let them have math talk.

Sometimes what I'll see more in that intermediate fifth grade and up range is I'll see the same kind of partner practice, partner games. I tried in those grades putting them in groups of four or five. It was disastrous.

They get really loud and they're just like, "I win," and they're not even talking about the math. I'm still doing pairs even in fifth grade and up. What I've seen teachers do sometimes that I think is more middle school-like or intermediate school-like is that they might take a concept they've been teaching and they'll take four or five activities that are partner-based, and then those are the only things kids are working with so they kind of stick with one concept at a time that they're doing review for.

It's spiral review of that concept, whereas in kindergarten, third, fourth, maybe even fifth grade, many times what I like to do is have spiral review of past concepts as well as what it is we're currently teaching, so that it's not just focused on one particular concept. Basically, it's pretty much the same thing. Pairs working around the room, work with math concepts. We want them to have more practice with.

Christina Tondevold: I think the biggest thing, again, the whole pair thing. I know you spoke to this again, but I did have a couple of people talk about how to manage it when you have a really large class size and no aides, that kind of stuff. I know you mentioned having duplicates of things, like just being able to manage the materials, but managing all of those little pairs. I think as people are hearing, "Oh my gosh, I'm going to have pairs, and if I have 30 kids, that's 15 pairs around my classroom." I can see the wheels a-spinnin'.

Debbie Diller: I see the looks of horror on your faces, people. Don't worry, you're not alone. I have worked in middle school where they have 30 kids in a classroom. Again, I start with space, and I think about how could we set this up? Your kids are big. There's really not room for them to sit all over the floor and stuff. It probably may not work if you have 30 kids and 30 desks in your classroom. One thing I did, this might sound really bizarre, but we set up the desks in what I call the airplane model. I spend a lot of time as a consultant traveling around the country, working in schools, and so I fly in airplanes all the time. Often the little express jets, you know with like the two seat and two seat?

Thank you, United and American Airlines for this idea. What I often will do is we'll set up the desks so that they're in pairs, so there's a row of desks, like two, two, two, two. There's pairs, so that when it is stations time, the kids sit side by side with their partner. They just work in the airplane model. If your classroom is not set up like that all the time, that's okay. You can teach kids, "We're going into stations. Can I have everybody?" Teach them how to move the desks into those pairs, so that they can do it and you don't have to.

One time I suggested this to a teacher and she was giving me a scowl when I suggested. She said, "My kids will make too much noise." I said, "Well, I learned this from teaching kindergarten. You have to teach the kids what you expect, and you have to have a practice time where you teach them just how we set up our desks." It's not going to be a waste of time because it'll save you time in the long run. You teach them how to pick up the desks silently without moving it and scraping it along, and then you set it down on the floor. Multiples, two by two. Teaching the

kids what you expect is really important. Then, even asking them how they want to problem solve. Our kids have really good ideas if we ever think to ask them as well.

Christina Tondevold: I have one final question on here, but was there anything that you wanted to chat about with math work stations that we didn't get to?

Debbie Diller: Well, I think one thing to think about is the containers themselves, like what do you put into the station. I would be careful about putting ... Don't put too much into a container, because if you put in too much, it might be hard for kids to make a choice of what to work on, and then the cleanup is a nightmare. I would say make sure that you have enough in that math station so that kids never get finished. It's the nature of practice, is that we don't want them to get done. I don't want kids popping up going, "I'm done now."

Usually, math stations I've found with our youngest students, they might be 10 to 15 minutes apiece, whereas with our older kids, it might be 15 to 20 minutes apiece. Make sure there's enough at that station for kids to do probably multiple times. You might have even a couple of things there. You could do this, then you could do that. Making sure that you have thought about the time so that you don't have this big mess on your hands of everybody finishing at once or kids saying "I'm done." That would be something I think would be important to think about. Keep it simple. The simpler the materials are, the more thinking kids have to do. Lots of bells and whistles and fancy stuff and polka dots and chevrons really sometimes distract our students from the mathematical thinking we want them to do. Keep it simple, and I think you and your students will be really successful.

Christina Tondevold: That leads me perfectly into the last question which was, what are good resources to read and so I want you to plug your resources.

Debbie Diller: I have it right here with me. The book that I wrote is called Math Work Stations. People always say, "Where can you get this?" I always say, "It's available where fine books are sold." This book was really a labor of love. Math was not my main interest when I began with stations. It really became a love as I worked with it more and more. I'm really proud of the work that I did in this book, and I really worked hard to make it mathematically sound. I really haven't found resources on math stations per se. What I recommend you do is that you read professionally about good teaching of math content so that you can think about, "How am I going to teach this?" Then put those things in your math stations. Some of my favorites that I studied. Anything that John Van de Walle is like math gold.

Christina Tondevold: That's my math bible.

Debbie Diller: That is my math bible too. I go to John Van de Walle and unfortunately, he's deceased. We can't go to him personally, but we have that legacy of his wonderful books. He's my number one guide that I go to. With development, which my background is in child development as well as literacy and math, I look at Kathy Richardson as just really having put in the years and years of understanding young children and what to do

with them mathematically. Kathy Richardson's resources are also must-haves. There are so many good people out there. I don't want to start naming names because I'll leave people out.

Christina Tondevold: There's so much great stuff.

Debbie Diller: There's so many, but those are two of my most favorites. I also have to put in a plug for Dr. Juanita Copley, who also works with young children. We taught at the same school in Houston in the 70's. I was a third grade teacher and she was a fifth grade teacher. Kind of a cool connection that we have together. Anyway, read professionally. Read math journals. The time that you might spend online looking for stuff, spend that time reading professionally. We're taking some of this online stuff that is being offered by Christina, grow your mathematical understanding and the stations will be a natural.

Christina Tondevold: There you go. I love it. If you do need more info on just the management of work stations, definitely check out Debbie's books, and I appreciate you giving up the time, Debbie, to be here today. I know I learned a lot about setting up the work stations, and I hope everybody else did, too. We appreciate you being here and being a part of the virtual summit.

Debbie Diller: Thank you, it's my first opportunity to do something like this online, so thank you for giving me the opportunity as someone in their 40th decade, 40th year, their fourth decade of teaching to try something new. Thank you. Keep trying new stuff. That's what it's all about.

Christina Tondevold: That's right. Thank you, Debbie. Thanks again for attending Debbie's workshop. Up next is our mini lunch session and you got to check this one out. It's with a friend of mine, Robert Kaplinsky. He's going to be talking about depth of knowledge and how to adopt tasks so that we can reach those higher depths of knowledge for kids. Hopefully you enjoy the lunch session with Robert. We'll see you later.