TRANSCRIPT

Multi-Tiered System of Support in the Mathematics Classroom

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LORI VAN HOUTEN

[**Slide:** *Multi-Tiered System of Support in the Mathematics Classroom*] Hello everyone. Welcome to the *Multi-Tiered System of Support in the Mathematics Classroom* webinar. I'm Lori Van Houten, from REL West at WestEd, and our featured presenter today is Becky Unker, from USOE. Becky, do you want to introduce yourself?

BECKY UNKER

Yes. My name is Becky Unker, and I am at the Utah State Office of Education in the Special Education Department. I work on the UNTSF grant, as well as numeracy within Special Ed.

LORI VAN HOUTEN

Thanks. Okay, so let's get started here. [**Slide:** *Making Systems Work*] I'm going to do a brief presentation to provide some context for what Becky will share with you about MTSS in the mathematics classroom. And, this is based on some of the tools and worksheets that you can download to have conversations about and use this information that you are hearing today.

[**Slide:** *Do You Follow Recipes?*] So the first thing I want to ask you is, do you follow recipes? This is a photo of my cranberry raisin pie that I make every holiday season. And I'm really bad at following recipes, but somehow it usually manages to turn out okay, despite the many variations that I use in making this. Recipe available upon request! But recipes in schools don't work so well. That cookie-cutter approach doesn't work nearly as well. No one recipe works in schools nor should we expect it to.

[**Slide:** *Every System is Perfectly Designed*] In fact, this quote from the healthcare system also applies to schools: *Every system is perfectly designed to get **exactly** the results that it gets*. What we don't usually understand is how the system is designed, or why we're making certain changes and the impact that they have. [**Slide:** *Shared Goal*] So with this information that we learn today, we have a shared goal here of improving what we do **reliably**. We are able to repeat it, and we are able to repeat it across classrooms, across schools. We do what we do, knowing what's going to work for whom. We're going to learn fast, to implement well, to achieve quality reliably at scale. This is a system that…this system of improvement science is

used at the Carnegie Foundation, and Tony Bryk is the one who champions this work most frequently.

[**Slide:** *How Do We Make Change?*] It's different than what we usually do. We come in with an idea for change, we have instructions about how to implement it, or we design the implementation, or a district tells us how to implement it, and we do so. And hopefully, you come up with quality reliably at scale. The problem is, just like my pie, if I change it and it doesn't work, we don't understand why, because we weren't intentional when we started out.

[**Slide:** *How Do We Make Change?* #2] But this is the Carnegie model, and you can see that it's a little bit different from the last two slides that I showed you. Here, we come in with ideas for change that are a little bit different. We have surfaced assumptions, we're being intentional about our implementation. And then we do small tests, each time testing a little bit different to see if the ideas that worked in your classroom are also going to work in mine. And we start small, with one classroom, and then we continue on until finally we have this to scale across all of our schools or across all of our classrooms.

[**Slide:** *Improvement Science: The Four Questions*] So the focus in this model is asking a series of questions—and again, these are embedded in those tools that we have for download. So the most important ones are: *How do we understand the problem and the system in which the problems are embedded?* What's our context? And then, as a result of that, *what change do we want to introduce?* Those two questions are really key to having sustainable and lasting change. You're not going to be able to implement everything that Becky shares with you, so you should probably be thinking strategically, thinking about which one of these is in our context.

[**Slide:** *Making the System Work at Your School*] So as you listen, listen for your context. Where is your school showing up here? When you're discussing what you're hearing, think about, what did we always assume is true about this, if we're…challenge what's working in your school, and then get really clear on that problem before you choose your solution. And, finally, we recommend being…maintaining a safe environment for the conversation that you're going to have. And with that, I'm going to pass this over to Becky, and let her take over the presentation and talk to us about math classrooms and MTSS.

BECKY UNKER

[**Slide:** *Multi-Tiered System of Supports in the Mathematics Classroom*] Thank you very much. Just a little bit of my history before we get started into the PowerPoint. I actually come to USOE from one of our larger districts in our state, and I was the special ed math specialist there. But before that, I was a classroom special ed teacher, and then I got into a situation where I did a co-teaching, which was an all-day inclusion class where I kind of hand-picked my students; because I was in a year-round school, I got to kind of choose my students. Of course, I chose those with some of the more extreme behaviors so that when we went off track, they went off track with me, so that I didn't come back to a lot of problems. And it also enabled me to maintain that…just the relationships between them, so we all had our breaks off together at the same time. I was teamed up with a gifted-endorsed teacher and planned our classrooms together. And that was quite an experience; I did that for about seven years. And then from

there, I jumped over to general ed; I jumped back into general ed, and was a general ed teacher for the next six years, and then went to the district office after that. So I've been on both sides of the fence as far as general ed goes and special ed goes. And so with that we will get started.

[**Slide:** *RTI and MTSS*] The phrases *Response to Intervention*, or RTI, and *Multi-Tiered System of Supports*, which is known as MTSS, I find are used interchangeably with most educators, meaning that they use one or the other, or sometimes even both of them, within the same sentence. But let's take a look at some of the differences between the two. [**Slide:** *What is the Difference between RTI and MTSS?*] RTI refers to the practice of providing high-quality, multi-tiered instruction and intervention, matched to the student's needs. That's really where the difference is. It's response to that intervention. It also includes universal screening of all students, multiple tiers of interventions, service delivery, problem-solving method; but again, it's all centered on the intervention. MTSS is an emphasis on schoolwide, differentiated, universal core instruction at Tier 1 for all students. So right with that, you can see the big difference. We go to…from RTI, which is just concentrating on that intervention for that student that's not making adequate progress, over to MTSS, where it's on a schoolwide, differentiated universal core instruction at Tier 1 for all students.

Tier 2 provides supplemental instruction to those students who aren't making adequate progress. It also includes a problem-solving process, and the data collection system, just as RTI. But in addition to offering a multi-tiered approach to assessment and intervention, MTSS integrates a systemwide continuum of support. So you're not only looking at that student that may not be making adequate progress, but you're also looking at that student that is at the other end of the spectrum. They are doing very well, but they're sitting in class because they're bored, so how do we support the high achiever as well as that low achiever.

[**Slide:** *Utah's 3-Tier Model of Mathematics Instruction*] In Utah we have a 3-tier math model of instruction. This is currently underway; we are revising this, but this is the document—and you can find it on USOE's website—that is in place right now. Some of the language is a little old; it reflects the RTI language, even though…and so we are moving it more to the MTSS language as we speak, and that should be done in a few months.

[**Slide:** *The 3-Tier Model Diagram*] So looking at the 3-tier model of math instruction, one thing we need to remember—and I hear this time in and time out whenever I'm in classrooms—is that the 3-tier model of math instruction does not describe students. When I'm out in the classrooms, teachers refer to their students as Tier 1 students, Tier 2 students, Tier 3 students. It really is describing the instruction that's needed to help all students understand the core math ideas.

[**Slide:** *Utah's 3-Tier Model of Mathematics Instruction;* focus on Tier 1] So Tier 1 instruction is guaranteeing access to the core math standards for all students. Now, people assume that we're doing…that all students are receiving core classroom instruction, or they're receiving those core concepts. But what I'm finding is, really starting probably about grade 8—from grade 8 through the end of high school—they're becoming more restricted, meaning that especially with our special ed students, they are no longer getting access to that core classroom

instruction. So we're restricting them even more; we're pulling them out and we're teaching them on what we feel that they're going to need for their life. And so this is really…it's really imperative. I mean, the data is dismal that's showing right now; that we need…that all of our students need that access. Within that core classroom, the teacher uses curriculum that's aligned to the Utah core standards, as well as effective teaching practices, including the Universal Design for Learning. We also are asking in that, that we collect formative data, and that should inform our instruction. And all students—ALL students—need to be taking formative and summative assessments. That's going to show whether they're, you know, whether they're learning or not. So that's showing that proficiency.

[**Slide:** *Utah's 3-Tier Model of Mathematics Instruction;* focus on Tier 2] Tier 2; the purpose of Tier 2 is to provide targeted instruction for students who aren't making adequate progress in Tier 1. Okay, that instruction is targeted to specific conceptual and skill deficit. It needs to be systematic and aligned with Tier 1. Tier 2 instruction is in addition to Tier 1 that students receive.

[**Slide:** *Utah's 3-Tier Model of Mathematics Instruction;* focus on Tier 3] Tier 3 intervention—you noticed on the last two slides it says Tier 1 core instruction; Tier 2 is small group instruction. This is the first time I've mentioned intervention. Tier 3 intervention is for students who have not responded successfully to Tier 2 targeted instruction. It's a smaller percentage of students, and they may have even more severe deficiencies in specific math skills. At this point, we need to be doing some diagnostic and weekly progress monitoring to check their skill deficits. If progress monitoring and the diagnostic assessment show that a student is not progressing, then this is where we think about further evaluation, maybe for some additional services. What I'm finding is, in most cases, most people feel like Tier 3 is automatic special education, and that is not what we're saying. Tier 3 interventions do replace Tier 2, but it's still in addition to Tier 1. So no matter where a student is, they always receive that Tier 1 core instruction.

LORI VAN HOUTEN

Becky, can I ask you a couple of questions about that?

BECKY UNKER

Absolutely.

LORI VAN HOUTEN

I think it's a fascinating distinction—and really key one—that notion of, this isn't about the level of the student; it's about the type of instruction that's being offered. Have I phrased that correctly?

BECKY UNKER

Yeah, that's an awesome way of phrasing it. RtI was so distinguished by the intervention, and so I feel like that's where it's been a hard time to make that change over to MTSS. You know, MTSS is still saying, we've got to have that good platform classroom instruction. And even that

small group, it's still about the instruction. But when you get to a Tier 3, that's a little bit more intensive; it may be even a smaller group, but that really starts to become the intervention piece.

LORI VAN HOUTEN

Um-hum, and so all kids would be, say in an Algebra 1 class or a math course 1 class, but you would be differentiating instruction within that class. So it's not about the kids; it's about the type of instruction that's offered to those students.

BECKY UNKER

Absolutely, yeah, it is about the instruction; and the data that we're seeing right now is supporting that notion—that we are restricting them, meaning that, and especially when you get into high school, they may not have some of those basic skills. And so teachers are opting to put them into, you know, other courses. And those courses aren't generating a test, and so we're not getting data. And actually, with some of those courses, we're looking at maybe, you know, what is the math that's in there; you know, some of them are a little loose on that.

LORI VAN HOUTEN

Okay, well, thank you for that. I'm sure you'll be talking or telling more about that type of instruction now.

BECKY UNKER

Yeah, absolutely. [**Slide:** *It's the Instruction*…] So it is the instruction that matters the most. [**Slide:** Quote] And I love this quote by William McCullum; he was one of the Core standards lead author. He said, "Students need to not only *do* the math; they need to be able to *use* the mathematics that they are learning." Now, my growing up and my schooling, I was only taught to do the math, meaning they taught me the formulas and, you know, I memorized them for the test, and now I can't tell you anything about what I did. So I wasn't really using that math that I was learning. We hear a little bit about real world math, and that kind of plays into this. We are expecting…we haven't changed the math. All of those formulas are still there. We're just looking at the way that we're instructing students, and what we want the students…we want them to be able to use those mathematics that they're learning. So that has become a favorite quote of mine.

[**Slide:** *Congress*…] Congress first introduced the concept of access to the general curriculum in IDEA in 1997 by stating, "Over 20 years of research and experience has demonstrated the education of students with disabilities can be made more effective by having high expectations for such children and *ensuring their access in the general curriculum* to the maximum extent possible." So let's think about that for a second; I'm going to switch to the next slide.

[**Slide:** Hitchcock Quote] "Beyond these general introductory statements concerning access to the general ed curriculum…"—access is kind of…you know, you can have access despite sitting in the same room as the instruction is being given. So when we reauthorized IDEA in '04: "…specifically require that students with disabilities be involved in and progress in the general

ed curriculum." So that's a little different; that's fine-tuning that word *access*; now we're asking students with disabilities be involved in and make progress in that general ed curriculum. "Thus, the overall right to have access to the general curriculum can, in fact, be viewed as consisting of three interrelated stages: access, involvement, and progress."

[**Slide:** *Cycle of Ensuring Access to the General Education Curriculum*] So accessibility of the curriculum to the student—does the student have the same tools, have the same access, that the other students in Tier 1, their general ed peers? Do they have those same accessibilities? The next question is involvement…or the next process in this is involvement. Involvement is an ongoing process of *meaningful* participation by the student in general ed curriculum. Okay, so we've got the students, they're sitting in the back of the room, they have the book, but are they participating meaningfully? You know, does your instruction allow entry points for them to be a part of that instruction? And then the third is progress; progress in the general ed curriculum refers not only to the final outcome, meaning the grade, but also to an evaluative measure that can feed back into the earlier stages. Are they making progress? If they're not making progress, have you offered some Tier 2 interventions? You know, have you brought them back to that Tier 2 and done some small group work with them? And so this goes round and round.

[**Slide:** *Team Time*] So the question I have for you and your team is: Discuss with your team; how are you doing on ensuring access to the general ed curriculum for students with disabilities? Does your staff have high expectations of *all* students? And if they do, how do you know that; how do you know that? Keep in mind the cycle of ensuring access, and be ready to share this with the rest of the group. We were doing this in a whole group situation. So you can pause here and ask your team this question. And more importantly, if they all say yes, then the question becomes, how do I know that? How can I demonstrate that all of my staff have high expectations?

[**Slide:** *5 Anchors for Differentiating Tiered Instruction*] Okay, now we have something that's called the five anchors for differentiating tiered instruction. The five anchors consist of response opportunities, strategic instruction, explicitness, intensity, and time. And we actually are going to talk about each one of these, with some examples, and then also allow you to have some team time after each one of these. This is a really nice place to get started when you are looking at, how can I make things different in my classroom. This is a good…this is a nice, easy place to start, because there's not a lot of prep that has to go into those.

[**Slide:** *Instructional Time*] So the first one is instructional time. A rationale for why the amount of instructional time is an important anchor for differentiating shared math instruction is that all students don't develop mathematical understandings at the same rate. Some students may have more foundational math skills than others, and that allows them to make connections more quickly. Increasing the time that students have to interact with the math, so it's not…when I say instructional time, it's not that you have to lengthen, you know. I taught math for 90 minutes. You know, I don't know what you're teaching math for, but it's not that you're increasing that hour, but it's how can I make the *most* out of that instructional time? How can my students have more time to interact with the math concepts that I'm bringing them now? You know, this can be done in a few ways. You can look at, you can…and you have to also

understand that, you know, there are concepts that you're going to take maybe two class periods, maybe even three class periods, to even introduce the concept. But then it's really thinking about, okay, now that I've done that introduction, how can my students get the most out of that? What can I…how can I set my classroom up so that they can interact with that math?

[**Slide:** *Team Time*] So think about that, and discuss with your team how that anchor looks. Look at your own instructional time right now in your school on your team. Go ahead and talk with your team, so pause here and then when you're ready, you can resume the PowerPoint.

LORI VAN HOUTEN

Becky, I want to ask a couple clarifying questions about that, too. Can it also be that you would lengthen the time that students have?

BECKY UNKER

Yeah, and, you know, we have to work within that schedule. So it's not… if you can lengthen that time, then most certainly that would be the first thing to do. But that seems like that is a domino effect around everything. But it's looking at what you are doing during that instructional time. Am I, the teacher, the one that is always up, you know, giving all of the instruction and doing all of the talking, and the students then have maybe five minutes to work on those problems? Or, how can I do that differently; can I ask my questions differently? Can I ask more open-ended questions? Don't be afraid to let those students struggle—we call it productive struggle—struggle with the math. We don't have to automatically give them the answer, which most students want to. And I'm not saying that the answer is not the end game, because we do want them to get the right answer, but sometimes it's more about the journey. More about listening to them and getting what their mathematical thinking is, in the way that they solved that problem. So giving them that time to work on it, rather than always being up and lecturing, and not giving them any time to interact with that. Does that make sense?

LORI VAN HOUTEN

Yes, and while some students are working with one another, would this be a time to pull a small group?

BECKY UNKER

Exactly. It's a perfect time to do that. And, you know, I like to say—and I want to have a T-shirt made—that small groups, it's not just for elementary. You know, we're pretty good with that in elementary, and especially more so, I think we're good with that with elementary language arts. We need to think that, you know, our kids need to be able to work together. For some reason, when we get into the secondary systems, we think that they all have to work by themselves; they all have to be in rows, and they can't work at tables, and they can't work together on things. And that's just not the way that most work places work these times, you know, in this day and age. We need to let them work together, and be in groups.

LORI VAN HOUTEN

Okay, let's do our next anchor.

BECKY UNKER

[**Slide:** *Instructional Intensity*] So the next anchor we're going to talk about is instructional intensity, and this brings in what we had just talked about with the small groups. Smaller teacher-to-student ratios can allow for more direct interaction between teacher and student. So teachers gain more opportunities to observe students as they do math and to discuss their mathematical thinking, which is exactly what we were just taking about. So, I know, my kids went to a big five-A high school, and their math classes were 40+ kids. And so, I know you're kind of thinking, now as you're listening to this, how do I have that time? And it's…we have to rethink the way that we have always been teaching. It doesn't take 25 problems to know if a kid gets the concept or not gets the concept. You know, it takes more like about five. So think about, you know, offering one really good, rich, open-ended problem to give students, and then give them the entire time to work on that. Give them time to work with other students on that. That's really what we're looking at this right now; it's that instructional intensity. Again, you can be more of the facilitator, if you would, in your classroom, rather than just the answer-key holder. And so, it allows you to be able to walk around to your students, and be able to listen to their mathematical thinking.

I remember very early on when I was just starting into this, you know, I actually got marked down by principals, because I had a few principals in my years that would come and observe me during math, and my math class seemed more like a PE class. I mean, we were very active, kids were talking; but you know what, they were all talking about math. And as I got my little report back—observation report from when they came in and observed me—I would always be marked down in that area. And so I tried to explain to the principals what I was doing with the students, and that they were all on task; they were all talking, but they were all talking about math, and so that they were all on task. But because I wasn't in that cookie-cutter mold of everybody sitting at their desks…and quite frankly, I didn't use a lot of textbooks in my classes either. And so I got marked down for that. But, you know, we need to get away from that; we need to allow our students time to talk, and it's their journey that we want to hear. We want them to understand that math, and be able to use that math. And they're not going to be able to do that if we just feed it to them all the time. So think about that.

LORI VAN HOUTEN

Can I, um…I wonder what you say to the teacher who says, "Well, I'm glad that worked for you, but in my classroom that's never going to work. I have those 40 kids, and if I let them start talking, there is no way I can monitor them all at once, and I know they're not going be talking about math. That productive struggle; it's not going to be that." What specific strategies can you offer to folks to counter that?

BECKY UNKER

So, it is a process. It didn't come to me overnight. It's a work in progress. Because it's a change; it's a mind shift for you as the teacher. It's uncomfortable. It's uncomfortable to just let your class go and let them struggle with it, but it's also uncomfortable for the students, because we have not traditionally taught this way. So start small; don't do this every single class period. Maybe pick once a week; and, you know, you really do have to set up those boundaries. Set yourself up for success. All it takes…and especially…you know, I used a lot of manipulatives, and I had to set those ground rules with the students. And all it took was one time of a student not using a manipulative in the way that I had asked them to be with them, and I gave them some awful work to do. That's all it took; it just took one time for them to realize that I meant business, and that they could, you know, that they had a chance to work on that. But start small, and don't, don't start…as educators, we typically start with our hardest group or our lowest group, because, you know, they've got to make so much progress. I say, reframe your thinking with that, and start with that group that, you know, maybe they're just on the edge. Maybe they're just low in a few areas, and so if we did some more work in those areas, you know—so you have something to start there with. The students get success, and, more importantly, you as the instructor gain success, and you feel good about it to where you want to take it and start it with another group. I also wouldn't choose your highest group either, because they're going to be our harder group, but in different ways than that lower group is going to be, if that makes sense. So start small; start small, and don't do it every day. You know, gradually ease into this; get some success under your belt. And then the more successful you feel as an instructor in doing this—because it's a mind shift for you as well—then your students are going to feel that, too, and feed off of that with you.

LORI VAN HOUTEN

All right, thank you. Yeah, I heard three real clear strategies there: to start small, work with a middle level group, and don't do it every day—actually, four strategies—and establish routines first. So that was really helpful; thanks.

BECKY UNKER

Good. [**Slide:** *Team Time*] So with your team, discuss what the anchor of instructional intensity looks like in your specific school. So you can pause here now, and restart the PowerPoint when you are ready. But take this time to discuss with your team on something that might work for you.

[**Slide:** *Instructional Explicitness*] Okay, the next anchor that we're going to talk about is instructional explicitness. Sometimes I think we get…there are two phrases out there—there's direct instruction and explicit instruction. Kind of like RTI and MTSS gets interchanged, so do these two. I really like the definitions of this instructional explicitness. So let me go over that with you. Students who aren't progressing adequately in mathematics can benefit greatly from instruction that makes mathematical concepts clear and their meaning transparent. Explicit instruction has to do with determining the most important and distinct features of a concept. Instructional explicitness—and just the same as RTI and MTSS are used interchangeably, I think explicit instruction, as well as direct instruction, gets interchanged easily, too. So I really like

this definition of explicit instruction. So students who aren't progressing adequately in mathematics can benefit greatly from instruction that makes mathematical concepts or skills clear and their meaning transparent. Explicit instruction has to do with determining the most important and distinct features of a concept and highlighting them through multisensory methods so that students can clearly and meaningfully access them cognitively. Now, in that last bullet, the important things that I want to highlight there are that you, as the instructor, decide what are the most important and distinct features of that concept. But then you highlight them through multisensory methods, so that students can access them cognitively. So examples of explicit mathematics instructional practices includes a method that's called CRA—concrete to representational to abstract. You may also know this as CPA—concrete to pictorial to abstract; to building meaningful student connections, modeling; it includes multisensory cuing and providing structured language experiences. I think that we as educators do a really good job with the concrete part; that's using manipulatives—we've done really well with that in the elementary. I see a little bit of it within the junior highs. I don't see so much of it in the high schools, which is sad, because there is some great stuff that is out there. But then what happens is, we go…we do these great things with the concrete manipulatives—and then we go right to the algorithm, which is the abstract. We forget that representational part, and I would like to talk about that representational part as not just being a picture, but it's also…it uses that…we have the eight mathematical practice standards, and in one of those standards it talks about that students need to critique the reasoning of others. So they need to critique their reasoning and the reasoning of their fellow classmates; and so I like to think that is part of that representation. If I can justify my answer to my teacher, I'm representing it; I'm able to do that. So I may use a picture, but it's that mathematical thinking, and that talking through that, being able to reason—that's another practice standard that they can justify and make reason of their answers. And so I think all of that kind of falls in with that. And so being able to determine what…out of the concepts that we're teaching them, if we can pull out what we want the most important and distinct features of them are, and then use that CRA to teach it to our students, our students would be much better off. And that to me is very different from the direct instruction. Direct instruction to me is where you say something to the students, and the students say it back to you. So you can kind of see the differences between the two.

[**Slide:** *Team Time*] So take this time right now with your team, and discuss how that anchor of instructional explicitness looks like in your school, in your classroom. And then go ahead and pause it, talk with your team, and then restart when you are ready.

[**Slide:** *Emphasis on Strategic Instruction*] The next anchor that we're going to talk about is strategic instruction. Competence with math requires the ability to problem solve. Our new core is all about problem solving, but problem solving is a metacognitive activity that incorporates strategic thinking. Students who aren't progressing adequately may not be approaching math in strategic ways. And I have to say that from the way math is usually taught, to the way we're asking…the way that the Core is asking it to be taught now—we were not…I was not taught to be strategic. And I also look at our students now; you know, I don't know of a lot of students that do board games any more, and have that strategic way of getting to be the winner of a board game. And so there's a lot of…you know, technology is wonderful, but in a lot of things, I think it's hindered us a little bit, too. But students can learn to become

more metacognitively aware when they are directly taught problem-solving strategies. So with some of our students who are having a harder time, we may have to teach them how to be problem solvers. And then it's not enough to just teach them, but we also have to give them supported opportunities to use them. So, by what I mean by supported opportunities, meaning that we set the context for them to use those strategies that we have taught them, so that they have time to practice them in a comfortable area, in a supported area where they are not going to fail. So then if they get better at being a problem solver, then they can take that and generalize it, and start using it on their own; and start teaching them, so that they can become metacognitively aware.

[**Slide:** *Team Time*] So take this time with your team and talk about how strategic instruction looks like for you, in your specific area. And go ahead and pause the PowerPoint, and then start it, after your team has had discussion with this anchor.

LORI VAN HOUTEN

I want to ask, too, if…can we go back to that one—the explicit and strategic [**Slide:** *Emphasis on Strategic Instruction*]. Those seem really closely related to me. So—and tell me if I'm not thinking about this correctly—but when you're talking explicitness, you're also talking about going deeply into a few things rather than covering material broadly.

BECKY UNKER

Right; you're picking out all of those skills that you want for your students to have.

LORI VAN HOUTEN

And then with the strategic instruction, they have to really own those skills. They have to be able to think metacognitively about them and apply them in a variety of situations.

BECKY UNKER

Exactly, and so…and then with this one, you know, with students who are having a more difficult time—you know, for a lot of students, they can come up with those problem-solving ways on their own. But for some students, they need to be taught those. And they can learn them; they just need to be taught them. But then they also need to have opportunities to use them. It's one thing to teach them to a student and then expect them to use it, but we have to set that learning environment up for them and let them have those supported opportunities to use them.

LORI VAN HOUTEN

Great; okay, thanks.

BECKY UNKER

[**Slide:** *Number and Nature of Response Opportunities*] So the last anchor is the number and nature of response opportunities. So an important factor in building mathematical proficiency is the extent to which students have many opportunities to use newly learned concepts/skills

and can explain how they solved the problem. So you can kind of see how they're starting to interlink with each other. We have talked about having supported opportunities. We need to emphasize active and meaningful response opportunities for students, and provide them effective process for fully understanding and becoming proficient with the math or concept skills. This is not just giving a sheet of 25 problems to do. Is that giving them opportunity to *use* the math, or to *do* the math? I think that's just *doing* the math; it's not *using* the math. So we want to set up those opportunities that…and they have to be meaningful. We use the wording *real world* a lot. But I don't know, I kind of like the phrase I heard a few years ago, is we need to give our math *context*. *Real world* lacks a little bit of that for me, because sometimes teachers will take a word problem, and they'll stick kids' names in it that are in the classroom, and think that that's real world. That's not real world. We need to give it context, we need to hook into, you know, we need to know our students—what their interests are. Those questions that I just loved in high school—where train A started at this time, and train B started at this time, and I needed to figure out where the two would meet. Well, quite frankly, I didn't really care. It didn't mean anything to me; there was no context with that. I had never been on a train; I had never seen a train, so it didn't matter to me. So I didn't do well on those kinds of questions. So it's really becoming more involved with the math, and getting the math to the students, and giving a context for what they will be able to use it in. The more opportunities a student has to respond to a particular math task, the more likely it is that the underlying neural connections that process learning of the targeted math will be strengthened. So we need to get them using that math. We need to create those opportunities for students.

[**Slide:** *Team Time*] So with that, again, discuss with your team how you can use response opportunities; how you can…how that anchor looks now or how you can strengthen it. Go ahead and pause the PowerPoint, and then resume again once you are ready to go with this.

LORI VAN HOUTEN

Does response opportunities…can I go back one more time, please? [**Slide:** *Number and Nature of Response Opportunities*] Response opportunities—is that also requiring students or asking students to respond to the same problem in multiple ways? Not just…sometimes the kid gets to do that work, but also to explain it this way, and to explain it using an algorithm, using a picture, using a chart of some kind; so different types of responses, not just the frequency with which they're asked to respond.

BECKY UNKER

Right, exactly. As we went back with our last slide where I talked about—let me see if I can find it [**Slide:** *Emphasis on Strategic Instruction*]—where we're teaching them problem-solving methods; I mean, that exactly ties into this response opportunity. [**Slide:** *Number and Nature of Response Opportunities*] A lot of teachers will give a problem, and they may give one way to solve it, and then ask the students to solve it in two different ways. That again, it's allowing them more opportunities to work with that math. For the students who don't automatically make those connections, or have those problem-solving strategies, what I have done in the past—and not just me, but many teachers have done—is, I will highlight someone in my room. So I'll say, you know, "Here is Johnny's way of solving this problem." I'll make a poster with it,

hang it on the wall, and so then when I get into my lesson, I'll say, "Okay, everybody solve this problem using Johnny's method, and then choose two other ways to use it." By the end of the year, you have…everybody should have a problem-solving poster up on the wall, and they can refer to, "Oh, I used, I used Andrew's method of solving this," and so on. So again, it's just giving them ways of using the math. If we go back to that first quote, "If you give students a worksheet of 25 problems, that's *doing* the math. If you ask students to solve problems in two to three different ways, that's *using* the math." They're using their problem-solving methods to do that. Does that make sense?

LORI VAN HOUTEN

It sure does. Thank you.

BECKY UNKER

Good. [**Slide:** *Resources*] Okay, and that concludes what I had. All of the resources that I have listed, or that I've used with this PowerPoint, are listed here. [**Slide:** *Contact Information*] Just thank you for this opportunity, and if you do have any questions, or if I can be of any assistance, please contact me. Thank you.