Office of Head Start - Putting It All Together Math Webcast

(links for viewing and download at end of transcript)

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Amanda Bryans: Welcome to the sixth and final webcast in this mathematics series for Head Start entitled, "Putting It All Together." We are excited that you have chosen to be with us, as we think about all that we have learned and analyze how mathematics should and can be addressed in early childhood classrooms. My name is Amanda Bryans and I'm the Division Director of Educational Development and Partnerships at the Office of of Head Start. I'm also a parent and I have greatly enjoyed these webcasts.

As I observed each one, I thought about the myriad ways that children develop mathematics, including many that might not be easily recognized as math, particularly when they are very young. As a representative of the Office of Head Start, I have thought long and hard about the importance of early math in the lives of Head Start children, as we endeavor to enhance their current learning and school readiness for kindergarten and beyond.

I know you join me in understanding the critical nature of our work in this area. I have also been extremely grateful for the opportunity to work with our early childhood mathematics expert, Dr. Juanita Copley. It has been a genuine pleasure to work with someone of her caliber, and terrifically inspiring to see her devote such time and passion to this critical area of early childhood education.

Dr. Copley, in concert with a number of Head Start staff and partners, has helped us provide a valuable training tool and further the knowledge and best practices in Head Start early childhood math education. Of course, as successful as this series has been, we at the Office of Head Start are far from considering this webcast the last time we will think about our mathematics initiative.

Rather, it strengthens our resolve to continue our work, improving the math education practices of the entire Head Start training, teaching and learning community. The Office of Head Start has many plans to support this mathematics focus, plans that we will be talking about at the end of the webcast. By virtue of participating in these webcasts, you, the instructional leaders of early childhood education, are identifying yourselves as being in the forefront of your field.

I know you have considered the many ideas shared in this series so far, and have already begun using the information in your particular setting. Hopefully, you have seen the five webcasts in this series on early mathematics. Please don't worry if you haven't. You can still learn a lot today, and you can go back and watch all of the previous webcasts at any time by simply visiting the Early Childhood Learning and Knowledge Center -- also known as the ECLKC -- website.

On behalf of the Office of Head Start, I would like to thank you for your involvement and encourage you to continue to utilize this valuable resource as we put it all together. Before we begin, let's briefly review what we have learned during the past five webcasts. In the first installment in this series, we offered a general introduction to mathematics and discussed, "Where is the Math?"

In each subsequent webcast, we focused on specific mathematics content including number and operations, geometry and spatial sense, measurement, and patterns and algebra. In each one, we answered four questions: "Why?", "What?", "How?", and "What else?" This webcast will be different from our previous webcasts in a few ways. First, the outline will be different. This webcast is not about one particular aspect of mathematics content.

Instead, it pulls all of the content together into one story or picture of math in early childhood. Second, the question and answer section at the end of the webcast will not occur. Instead, we will hear from Head Start instructional specialists and leaders and early childhood teachers as they discuss their needs for professional development in mathematics, and their plans to use the webcasts in their settings.

Third, in the last section of the webcast, entitled "Stay Tuned," we will present some of our ideas for the future support of mathematics in early childhood settings. We will then give you the opportunity to send us suggestions, questions, and ideas that can be shared with the Head Start community, so that we can continue this important initiative. Now, it's time to get started. Let me again introduce our expert, Dr. Juanita Copley. Nita?

Dr. Copley Thanks, Amanda. I can hardly believe that this is the last webcast in this series. What an opportunity this has been for me. I can't tell you how much I have enjoyed talking to you via these webcasts. The support team in the Office of Head Start has been outstanding, and I want to especially thank everyone involved for this opportunity. This webcast has been the hardest one for me to write and put together, not because we don't have enough information to share.

Rather, there is so much to say, and I want to make sure I include the most important ideas about mathematics and the young child, so I have chosen to include two main points in this webcast -- one part that will be presented before the break, and one part that will be included after the break, and I have chosen to call my comments "advice." First, I will introduce five ideas, advice that I am calling "how to teach math to young children."

As you know, the primary audience for these webcasts is the instructional leader in early childhood settings. Because the instructional leader's job of teaching the teachers of young children, this section addresses some ideas that can be used to accomplish that very important job. I believe that the ability to teach children well is a prerequisite to teaching teachers.

Many of the ideas presented will be extremely useful to teachers of young children whether they be Head Start teaching staff, parents in home settings, child care workers in home or center settings or teachers in prekindergarten classrooms. For that reason, I want to first address important ideas about teaching math to young children.

Second, I have some advice concerning professional development for early childhood teacher educators and instructional leaders, those who provide that type of professional development. Please know that the advice I will share is not just my advice.

Rather, I have consulted with many of my colleagues in Head Start, instructional leaders in the city of Houston where I live, technical assistance Head Start leaders, and many of you who have sent in your suggestions and questions after each webcast.

In addition, I have used the Head Start Leaders Guide to Positive Child Outcomes, specifically the section entitled "The Big Picture". I've used the National Council Teachers of Mathematics Prekindergarten Focal Points and the joint position statement by NAEYC and NCTM entitled, "Early Childhood Mathematics: Promoting Good Beginnings."

And, of course, the information contained in the previous webcasts have been used to formulate this advice. Please know that you will see many slides today that you have seen before. That is on purpose. It is important that we remember what we have learned as we put it all together. Before we discuss the advice for teachers, let's look once again at the ideas we discussed in the first webcast -- the specific strands that could define mathematics learning.

Do you remember, in a book entitled "Adding It Up: Helping Children Learn Mathematics," the National Research Council defined mathematics learning or proficiency as containing five strands. These five strands are called strands because they picture them as part of a rope of learning, where each strand is intertwined with the others.

As you may remember, these strands are not listed in order of importance. Rather, they are to be thought of as strands that are all necessary if children are to experience mathematics successfully. I want to review each of them quickly, and then we will refer to them again throughout the webcast.

First, procedural fluency can best be defined as those procedures or skills that are necessary for children to acquire as they learn mathematics. We have illustrated this strand in many ways and most often we have talked about it as counting. The second strand listed is conceptual understanding. We illustrated this strand over and over again as we

worked to help children really understand specific mathematical ideas.

Do you remember the hoop game that children played to help them develop their concept of five? Again, we presented many activities that helped children develop the concept of number, shape, weight or pattern. Strategic competence refers to the idea of mathematical problem solving for young children. Hopefully, this book compiled by one of the classrooms we filmed entitled "How Many are Hidden?" will remind you of the problems the children created.

Remember the child who hid three of his four counters and asked his partner how many were hiding? I remember his smile when his partner was able to tell him "three" after looking at the one that was left. The children in this classroom have not forgotten their problem-solving because they frequently solve and resolve the problems as they re-read this class book.

The fourth strand -- reasoning adaptations -- describes the importance of observing and listening to children as they work with materials or describe their reasoning. Remember how we were able to see how well Wyatt reasoned when he separated his favorite blocks from the ones he didn't like?

Finally, the strand of productive dispositions is one that is critical to successful mathematics learning. Children who possess the dispositions of persistence, enjoyment, curiosity and flexibility as they learn mathematics can develop productive dispositions -- dispositions that are evident in this statement said to me as I left one kindergarten class. "Mrs. Copley, you always have lots of problems. Come by any time and we will help."

Now, remember these five ideas as you hear and see our advice. You will see them again. There are five ideas that make up our advice to teachers. Each of these will be discussed and illustrated in detail during this first part of the webcast. They are: number one, focus on the child. Number two, teach important mathematics. Three, facilitate children's engagement. Four, assess continually. And five, believe that all children can learn mathematics.

First, and I believe most importantly, the teacher's focus should always be on the child. Are you surprised by this statement? Did you think I would say your focus should be on mathematics? Well, as a teacher of young children, I strongly believe that the young child should always be my focus. As such, I need to focus on their interests and their cognitive, social, emotional, linguistic and physical development. Naturally, I am quite interested in children's interests in math, and their cognitive development.

However, I know that children learn best when I focus on their interests, their strengths, their needs, and I will continue to do so. Others agree with me. One of the recommendations in the joint position statement is that good mathematics instruction should enhance children's natural interest in mathematics. In my experience, I find that young children are fascinated with numbers, shapes, measurement, comparisons, and patterns that they discover. My job is to focus on the child and this natural fascination.

In addition, the position statement asserts that teachers should base mathematics teaching practices on knowledge of young children's cognitive, linguistic, physical, and social-emotional development. The development of children's cognitive and social-emotional development as they are learning mathematics has been especially evident in our webcast examples.

Do you remember Olivia's persistence as she made her patterned necklace, and the resulting pride she demonstrated with that beautiful smile of hers? Or the fine-motor skills that Derek exhibited as he poured orange water into this container, exhibiting his physical development as well as his cognitive development of measurement? And I will never forget our sand babies and children's delight and care of their babies.

Remember how Isaiah and Dante compared their babies using their language and the strong social-emotional development they existed? A focus on the child helps us observe both cognitive and social-emotional development as they learn. With the sand babies, Iliana learned lots about measurement. Mathematically, she said, "My baby is heavier than Amanda's and lighter than my teacher's, but I am lots bigger and heavier than my baby."

Yes, she learned some mathematics vocabulary. More telling, perhaps, is the care she exhibited for a baby when she

expressed the important idea that her baby needs to be held close -- cognitive development, yes. Social-emotional development, yes as well. In the "Big Picture" section from the Head Start Leaders Guide to Positive Child Outcomes, one of their first recommendations is to create the environment for learning. This is especially important when you focus on the child.

Many people have asked where the tapes of children have taken place and even questioned if I had just selected smart children or rich schools or good places for our illustrations. My response to that is, "Yes. I have selected smart children. I value each child's potential for learning and consider them to be amazingly smart. I am in rich schools. However, rich is not defined by a high socioeconomic status. Rather, it is defined by the beliefs held by the teachers and the directors.

And I am in good places, places that are defined by the focus placed on young children and the importance of a consistent environment created especially for them." To illustrate a focus on young children, let's listen to the administration team of one of my sites. Listen as they discuss the importance of routines and a consistent, child-focused environment.

[Video begins] Miss Oliver: We start off, we have a whole team of people that actually creates every child -- the child is taken out of the car and said hello. They make contact with the parent and the child. The child then enters the building where the administrative staff hugs the child, makes a connection there and says, "Hello," and then when the kids enter to go to the classroom, the teacher again greets the child and says, "Hello."

So the children know right from when they pull up at the beginning that they're going to be greeted by several people, and it just creates an environment that's safe for them and they're excited to be here. Dr. Copley: I would say I have noticed many of the hugs, and I've gotten hugs when I come, so that's one of the routines I really like. Yeah. So, and then, Maria, tell us about...

Maria: We would like to create an environment of having school family culture so from the very beginning we know it's very important for the children and teachers that we make a connection with our children, so one of the things we do is I put on my red hat and sparkly glasses and I'm "Nancy with the News", and I begin with singing the school family song in both languages...

...so we have our school family song, which then follows by our project skills class, which is working on our social skills, which is one of the days, so the children know it's the song, it's the social skills and they must have the birthdays announced so every day we announce the birthdays followed after then by the pledge of allegiance, so they have all these routines that create connection to our children.

Dr. Copley: We were, I think, able to see that on the tape, which we're going to see in a little bit, but the idea of you doing that and, of course, you have the video camera, which makes that a very nice thing, but it's the same routine every day. Maria: It's the same routine.

Dr. Copley: And I believe that the kids know about "Nancy with the News". Do they know that that is you? Tell me one of those stories.

Maria: The funny thing is, I have children come up to say, "Nancy, I watch your show every morning." Or, the funny thing is, because we do have the schedule of teachers that will send their students so they can help "Nancy with the News", with the morning procedures and routines, some of them will see me -- they get here and I'm putting my hat on, my glasses on, and they're like, "Ooooh - so you're Nancy with the News." That's quite funny to me, but it's a lot of fun.

Dr. Copley: Yes, it is. Miss Oliver: And all the teachers, if you look in their classrooms, they keep their daily schedule posted, which another shows all the patterns, so the kids know where they go each day during there is Nancy with the News, and they actually have a picture of her.

Dr. Copley: Yes. I have been in the classroom when they have been watching Nancy with the News. That's very

important. Now, Scott, you are the librarian and I know you have a lot other duties that are assigned, I believe. What are some of the routines that you implement?

Scott: Well, I think one of the -- after they get done, right before they watch Nancy with the News, they have breakfast and I really like the routine we have for breakfast which we just started this year, and it's really made a huge impact on our students. They come to their classroom and they're greeted by their teacher as Miss Oliver mentioned, then they get to get their little breakfast plate, and little card and their napkin and go get breakfast from the cafeteria lady, but I think what's so important about it is that routine is then carried out.

They go back into their classroom, they sit as a class and eat breakfast, they learn how to clean up. First they learn how to get their breakfast and get their card, then they all eat together and they clean up and are able to -- that extends that whole skill into life.

Miss Oliver: We have some children struggle with when they come in, they feel apprehensive, and what we have done is even their daily schedule is a picture of what's happening next, and it goes down the schedule, and what we have done is we've even created them their own schedule, so if they're feeling insecure they can look at that and know, "Oh, so this is what I'm doing next."

Dr. Copley: They have their own copy. Miss Oliver: We have, the ones that struggle with that, and you know, it's -- it's amazing. It's like a weight lifted off their shoulder. They know what's going to happen next.

Dr. Copley: Can you see why I selected this site? Yes, it is in a high-need area. 91 percent of the children at this school receive free or reduced breakfast and lunch. Yes, English is not the first language for 70 percent of the children. More importantly, this is a school that focuses on the young child. This is a place where I can teach young children and mathematics. Did you hear anything in this first piece of advice -- focus on the child -- that related to one or more of the strands of mathematical learning? I know I did.

When you focus on the child and their physical, emotional, social, cognitive and linguistic development, productive dispositions can be enhanced as well as the potential understanding of mathematics. Yes, focus on the child. It is an important, essential piece of advice. Second, teach important mathematics, intentionally and appropriately. Doesn't this sound like a no-brainer? Of course, I would say that you should teach mathematics. That is what these webcasts have been all about.

And yet, I want to emphasize these two words: "intentionally" and "appropriately". Often, I hear adults say that mathematics is just not appropriate for young children -- that it's too hard, that they won't like it, or that there is not time. To that statement and those reasons, I say an emphatic "no"! One of the key recommendations of the joint position statement outlined appropriate teaching.

It stated, "Provide ample time, materials, and teacher support for children to engage in play, a context in which they explore and manipulate mathematical ideas with keen interest. That is appropriate mathematics teaching." Another recommendation emphasizes this idea as well by stating, "Actively introduce mathematical concepts, methods and language." That talks about the intentional teaching of mathematics.

Yet another recommendation from the joint statement emphasizes both appropriate and intentional teaching. It stated, "Integrate mathematics with other activities and other activities with mathematics." Do you remember the web of domain contexts in our last webcast on patterns? Do you remember all the connections that can be made when we intentionally and appropriately teach mathematics?

Well now, let's look at a game called bag relay that we recently played in a prekindergarten class. The goal of the game was to fill as many bags as possible with a specific number of pom-poms. Appropriately, children worked with a team of their peers to select the number of pom-poms labeled on their bags. Let me show you what the bags look like. This was a bag for the number five.

If you look at this, you will see that it had the numeral five listed as well as the ten frame that had the five dots

showing five pom-poms. More importantly, probably, is the bag of zero. If you look at the bag for zero, it shows you the numeral zero but there are no bags -- or no dots in this bag. Now, appropriately, in this activity, an adult facilitated each team as they talked about what bags they should try to fill first.

I intentionally planned the lesson near the end of the year, because children were used to the number quantities from one to ten, and they had just begun to learn about the idea of zero. I also intentionally planned that children would be physically involved.

They needed to run to the hoop that contained the pom-poms. They needed to place the correct number in the bags, and they had to jump and clap that specific number before running back to their team. I also intentionally asked the waiting team members to show the quantity for the bag being filled with their fingers to help -- to help their partners. Now watch as this mathematics lesson that was appropriately and intentionally planned -- watch it as it evolves.

[Video begins] Dr. Copley: Okay, okay, Cody, what number do you have? Do you want to hold the bag and let him -- Cody, put them in, but one at a time, Cody, one at a time. Two... try it. Children: One, two, three, four, five, six, seven, eight, nine, ten. One, two, three... Dr. Copley: One at a time. Child: ...four, five, six, seven, eight, nine, ten. One, two, three, four, five, six, seven, eight, nine, ten. One, two, three, four, five -- seven, eight, nine, ten.

Dr. Copley: Take it back to your seat -- this isn't finished. Everybody stop. Show me with your fingers six, you guys. Show me. Ten back there? Do you know what? I see a bag, group, that had ten and ten and six and ten and then I have two groups that have eleven. How do you show eleven? I guess we'll have to do -- can you do it -- put up ten. And is it -- how many more would we need to make eleven?

Teacher: How many more would we need to make eleven? Child: One more! Dr. Copley: Just one more. That's exactly right. Let's do it this way. I have eleven. Can you do that? Let's do it. I have eleven. Give yourselves a hand. [Video ends]

I have to tell you one story that came from this activity. There was a little girl in the very first group that came up to the bag -- up to the hoop with the zero bag, and she looked at the teacher that was there and said, "Ahhh" and the teacher said, "Put zero pom-poms" and she just went like this, and she said, "Put -- clap zero times," and she just went "Ahh," and then she said, "Jump zero times," and she went, "Ahh" and, as she ran back to the group, she said, "Zero is a good bag. It doesn't take long."

Now, what happened is that was really one of the first times that the whole group realized that zero meant really nothing, and no pom-poms, and it was really a neat discovery for all of them. The teaching continuum in this particular episode, as well as in many things, is an important aspect when we think about intentional and appropriate teaching. This continuum first appeared in an NAEYC resource and has been referenced in the "Big Picture" section of the Head Start Leaders Guide to Positive Child Outcomes.

Could you see many of these behaviors demonstrated by the adults in the video clip you just saw? Appropriately, some children needed more directed teaching as they filled their bags. Appropriately, most children were scaffolded as they completed their runs. And appropriately, for more independent children, their activities were simply facilitated and acknowledged. Now, let me illustrate yet another story of intentional and appropriate teaching in a prekindergarten classroom.

Mr. Embry's class planted a large vegetable garden in the courtyard of his urban school. Intentionally, he planned to teach many lessons, lessons that integrated many different content areas as well as mathematics. The children were amazed and excited by the plants that just grew and grew and grew and grew, and there were so many opportunities to measure just how big they grew. Can you see just how proud this young child was as she picked the produce from the class garden?

Taking care of the garden was just another class job that provided an opportunity to follow a schedule and a pattern. Measuring their produce was important, and provided an opportunity to use measurement words. This class then went to "market" and sold their produce in the gardener's corner. They earned more than 140 dollars for their class. Wow.

What an opportunity to see the results of their efforts, count money, and use the earned money to buy classroom supplies.

They believed they were so rich, and they were -- a fantastic, intentional, and appropriate lesson that encouraged math skills as well as many other social, physical, and cognitive objectives. Remember the second webcast when we discussed intentional teaching of number and operations?

The book "Five Creatures" was introduced to talk about part-whole number relationships, help children compare number quantities using the height of a unifix cube tower, and to encourage children to create their own number meanings using the creatures in their families. Appropriately and intentionally, this lesson was used early in the year, as children used one-to-one correspondence and matched the people and animals that lived in their house with unifix cubes.

They compared the height of their towers with their peers' towers and began understanding number comparisons, intentionally and appropriately planned and taught. Did this work? Yes. Children's books often have good connections between the world of the child and the world of mathematics. They are also intentionally used to reinforce mathematics concepts.

In each webcast we have appropriately used them to introduce content and to encourage children's representations of mathematics in their own book. Intentionally, these books become part of their class library and are read over and over again to reinforce mathematics learning. In the "Big Picture" section outlined in the Head Start Leader's Guide, three recommendations speak to our second piece of advice, teach important mathematics.

These three are plan focused activities, support and extend play, and integrate all domains throughout the curriculum. Do these sound familiar? They should. Both the Joint Position Statement and the Head Start Leader's Guide have the same recommendations when they talk about teaching important mathematics. As you can see in the pom-pom game and in our other examples, teaching important mathematics certainly involves mathematical learning.

What strands did you see demonstrated? Did you see procedural fluency when children were counting the pom-poms or the way conceptual understanding of number was taught physically and cognitively as children jumped, clapped, counted, and showed their fingers? What about the way children had to decide which bags to use first during the relay game, or the way they communicated with their peers and teachers to explain their reasoning? Certainly, some children were demonstrating their strategic competence and reasoning.

Finally, I hope you saw the exciting dispositions as children played this game, or as they harvested their produce, or played during center time. Yes, teaching important mathematics is a critical piece of advice for all early childhood teachers. Our third piece of advice is to facilitate children's engagement. The Joint Position Statement puts it this way: "Provide for children's deep and sustained interaction with key mathematical ideas." I often hear teachers and parents talk about young children's short attention spans.

However, I have often observed young children with long attention spans and their sustained interactions with mathematics activities. The difference lies in their interest, the materials they interact with and the time allowed for engagement. These four year-olds spent a long time creating a perfectly balanced structure. They did not need to be told to explore geometric concepts.

They were provided with materials, given ample time to explore and supported when they had questions. Yes, the teacher facilitated their engagement with mathematics and they were so proud of the result. Jennifer can hear the sound of the sea in the seashell. It's a pattern. Thump, thump, thump. She could then model the same pattern by clapping. In this next video clip, my 16 month-old grandson Ford interacted with a particular set of blocks for more than an hour.

Naturally, no one had to ask me to observe this interaction. However, I was amazed by his persistence, his focused engagement, and especially his delight at solving the problem of what to do with that green block. While he can't verbalize the problem or solution, you can agree with me an observation of his work shows his reasoning behavior.

[Video begins] Mother: Yay! Stick that your tongue out. Yay! Ford, yay! Look. [Baby noise] It has to fit. I don't care what you say, this one's supposed to go in here. I just love it, look at that. Ford! All right! All right! It will go this time. [Baby noises] Come on. Good job! What's your problem? Oh. See. I was going to say something about that. Hi. There. Yay! I knew it would do it. [Happy baby noises] Dr. Copley: You got it. Very good. [laughter] Yay! Very good. [Video ends]

Did you see some elements of mathematical learning? The boys who had built the block structure, the flower counters, and young Ford all illustrated the disposition of persistence that is necessary for mathematical learning. Also, although the fine motor skills necessary for Ford's block building were not fully developed, he continued to try to solve that problem over and over again, until he got it right.

His reasoning seemed to be, try and try it again, aometimes changing a little until it works. As parents and teachers know, even very young children can exhibit the productive dispositions that are necessary to learn mathematics. My fourth piece of advice deals with an issue that concerns all of us: assessment. We state it this way: assess continually, during observations and instruction, as well as during children's play.

Again, the Position Statement supports this advice by asserting that teachers should support children's learning by thoughtfully and continually assessing all children's mathematical knowledge, skills, and strategy. Do you hear the word "continually"? I understand that often we put a child aside for more -- we pull a child aside for more formal assessments, and I realize that that type of assessment may be necessary.

With that said, I believe that continual assessment of procedural fluency, conceptual understanding and strategic competence can and should happen during instruction, during focused class observation, and during play. Playing a game with one or more children helps me understand their levels of strategic competence as well as their procedural fluency in counting or understanding of a particular concept.

More importantly, the assessment is done within a typical class activity, and I am better able to assess their understanding in context rather than in a contrived individual setting. Asking children to decide which side is heavier is a question that can prompt children to demonstrate their understanding of measurement. These boys made number sculptures in the art center and provided an excellent opportunity for the teacher to assess their number concepts.

We made sandwiches and cut them into different shapes. Children had to order their sandwich by shape, thus providing an easy and edible assessment. Observing children match groups to the correct numeral in the math center is an excellent time to assess their ability to understand numbers. A team teacher helps using position words as it describes where he looked for clues: under, over, on top of, next to, right or left.

As you might imagine, he was an excellent police detective and the teacher could assess his use of position words. Observing the class animals, drawing pictures, and talking about what we saw provided many assessment opportunities. One of my favorite games for young children is called the snake game. The snake game that you will observe in this next video clip originated in South America. There, children played this game using large seed pods for the game board, and the seeds for the counters.

In our classroom, children use the snake board, a token for moving from one space to the next, and three counters. The goal was to move their token from the tail of the snake to the head. Watch as I introduce the game to the whole class, and then as children play with their teachers. See if you can identify possible assessments that teachers can make as they play this game with the children.

[Video begins] Dr. Copley: Here's what's going to happen. When you get three counters, you can either put one in your hand, and get rid of the other two behind your back. You can put two in your hand, get rid of the other one behind your back. You can put three in your hand, get rid of -- Well... Children: Zero.

Dr. Copley: Yeah, get rid of zero. That's good. Or you can put zero in your hand? What we're going to do on my team is guess what they have in their hand. Now don't you guys tell. It would be silly if you told because you'd know.

Would a good guess be four? Would that be a good guess? Child: Yes. Child: No.

Dr. Copley: Why would it be a bad guess? Yeah. We don't even have four. Wouldn't that be a silly guess or a really silly guess would be ten. Wouldn't that be silly? Or eleven. That would be really silly. Twelve, oh twelve, oh, that would be the worst possible guess. We could be guessing bad guesses all the time but we want to guess either zero, one, two, or three. Now, here is how we know the move.

If we guess correctly -- in other words, if we guess two and Miss Potato had two in her hands, we would get to move two spaces, because we were right. We guessed well. If we guess wrong, if she had two and we said three, your team gets to move two. Okay? Sounds good to you.

Child: Three. Teacher: Three? Do you have three? Oh no, you have zero, but you don't get to move. Dr. Copley: Don't open yet. Are you ready? Teacher: Don't open yet, now can you open? Can you guess how many? Are you ready? How many does she have? Okay. You're right! Excellent.

Dr. Copley: Oh. He got it. Teacher: So you get to move three spaces. Child: I did it! Teacher: Very good. Now you give them back. Teacher: Good job. Your turn. Okay. His turn!

Child: There's a black one. Teachers:Yeah, it's a black one, yeah. Right there. This one. Excellent. Good job. Got it? Okay. Guess how many she has! Child: Three. Teachers: Close your eyes. There you go. Oh. He got it. Okay, now move your blue one three spaces. One, two, three. Right here on the white one, there you go.

Teacher: Two. Excellent. You're doing very good. Excellent. Teachers: Oh, what happened? Child: Don't tell me. Three. I have a picture... Teacher: Okay, sweetie. Child: Right there.

Teacher: All right. Okay. Open it! Child: [laughs] You got two. Teacher: So you get to go two times -- two times. Right there, right there. All right, what do you have?

Teacher: You got it. You got it! Child: I tricked you, then you tricked me! [Children talking] Teacher: Close your eyes. Okay. Are you ready? Child: Guess how many?

Child: Three. Child: You got it. You got it! You got three. I mean four. I mean three. [Video ends]

Dr. Copley: In this game, many children discovered that zero was not a good choice even though they fooled their partners. Mathematically, these children discovered an important numerical pattern or property, that when zero was added to any number, it results in that same number, or in their words, "I don't go anywhere." One of the teachers who participated in this game verbalized that she learned more about those two children during the interaction than she ever had in the assessments she was required to do.

She discovered who used one-to-one correspondence to count, who was able to use her partner's previous guesses to predict how many were hiding, and the strategic thinking that a young child could employ as they played this game. It was also exciting to see who discovered the idea of zero and understood the outcome of that choice. There's a lot to learn with this type of assessment, and it's fun as well. So what about mathematics learning? What is there about that when we think about assessment?

Just if we pay attention to the five areas as we plan young children's experiences in mathematics, we also need to assess young children in these five areas. Typically we assess their procedural fluency only -- for example, their counting skills, or ability to label shapes, or read a repeating color pattern. However, we must also ask questions that address their conceptual understanding --

Questions like, "What can you tell me about the number four?" or, "Can you place all the shapes that are triangles in this pile, and all the shapes that are not triangles in that pile?", or, "Can you make another pattern with these blocks, just like this one?" As we have seen, often assessment of children's problem solving competencies or their reasoning adaptations, often that is conducted through primarily observation.

However, we must provide many opportunities and experiences that encourage problem solving if we expect to observe them. Finally, we should not ignore assessing children's dispositions and their interest toward mathematics. Assessment that is used to inform our teaching in all areas of mathematics helps us know what experiences to provide and how we should teach. Our fifth piece of advice can best be stated as, "Believe that all children can learn mathematics."

The National Council Teachers of Mathematics stated this best in their equity principle. The principle states, "Excellence in mathematics education requires equally high expectations and strong support for all students." In addition, the Joint Statement emphasizes that if we expect all of our children to learn mathematics, we should use teaching practices that strengthen children's problem solving and reasoning processes as well as representing, communicating and connecting mathematical ideas.

Unfortunately, I often hear comments that differ from these positions -- comments like, "These are young children, they can't be expected to think," or, "They should just learn the basics, counting or repeating and naming things. They can't learn the harder stuff," or, "Math was too hard for me. How can I expect a young child to do it?" These comments do not support the belief that all children can learn mathematics. What mathematics are we talking about? Let's revisit the graph we that have used in every webcast for the answer.

Just like children in all grades, pre-kindergarteners learn about number, alegebra or patterns, geometry, measurement, and data analysis or graphing. In fact, these concepts form the foundation for all of school mathematics. Believing that all children can learn mathematics means if you have high expectations for them, it also means you will provide experiences for them that focus on mathematics content and processes that will give them a strong foundation for school mathematics.

Remember when we talked about growing patterns and webcast five? Often teachers have told me that young children should only do repeating patterns, and that growing patterns were too hard or difficult to understand. I disagree. It may be that we just haven't found a way to teach it appropriately. Do you remember the plus one pattern we found when the children acted out, "Bear Snores On"? This was a plus one growing pattern, one that looked like a staircase.

Children then continued their own staircase pattern by building one with blocks. Is this too hard? No. When taught appropriately, growing patterns are as well -- are well within the reach of young children. Do you remember another example of a growing pattern found in the verse, "My Aunt Came Back"? Again, the plus one pattern was taught appropriately through physical actions, visual pictures and auditory clues. Is this too hard? No. Is it taught in an appropriate way? Yes.

The next video clip illustrates our belief that all children can learn mathematics. The children were first introduced to this activity by viewing the beautiful, detailed pictures in "The Water Hole" written and illustrated by Graham Base and published by HNA Books in 2001. This book shows a variety of animals as they drink from the water hole. The book provided a nice beginning for an estimation and multiplication lesson. Are you surprised that I would think four-year-olds could estimate and multiply?

Well, while the children in this video clip are not estimating and multiplying like you would, they are experiencing beginning concepts of estimation and multiplication. In this activity, groups of children pretend to be animals using finger puppets. During the activity, they move back and forth between the edge of a field, and a watering hole, getting one drink of water each time.

The pretend watering hole is represented by a box of unifix cubes, and a drink of water is represented by just one cube. To begin the activity I modeled a caterpillar's crawl toward the water like this. I asked them first to estimate how many drinks of water the caterpillar would get, and then I started to crawl, and I crawled very slowly, like this. I wish you could have seen their faces when I didn't get any drinks in the time allotted.

We also in this video -- because you're going to see them use many different animals, and I would like to show you what you're going to see. First of all, you're going to see some frogs hopping, and they are going to be hopping trying

to get drinks of water. Then you're going to see some mice, and the mice are going to be mice that get frightened by a cat, so they will stop periodically, and finally you are going to see very beautiful butterflies as they go across to the watering hole.

Now let's observe as the children watch how many drinks of water two frogs can get in 30 seconds and estimate with their set of unifix cubes. Pay particular attention to the children who are sitting on the side. They are displaying unifix cube towers to show their estimations.

[Video begins] Dr. Copley: Start, girls. Go. Hop. Go, frogs, go. Aren't they good? Oh, they are so good. Get them water. Get one cube. Come back to me. Okay, frogs. Bring your water back. Let's go. Bring it back. Keep going, frogs. Good. Oh, walk like a frog. Okay. Give me those. Go back again. Keep going until they say stop. Let's go. Okay. Okay. Look at them. Aren't they good? Stop. Okay, frogs. Come back. Frogs, come on back. Look how many they got. Oh. You did so great.

Would you give me -- turn around for me? Okay. Turn around, and I want you to bow for me. Would you bow? Give them a hand. I'm going to let the ladies have a seat back over there. Thank you very much. Let me show you what they got. Everybody, here is what they got. A lot of you estimated a whole lot more, didn't you? Look. Is that how many you estimated?

Yeah. You were a lot. Is that how many? Pretty close. Some of you estimated ten, I saw. They only got three. How many did you estimate? Did you estimate that much? Is that what you estimated? So you were pretty close. You weren't very close, were you? Do you remember Ms. Lamada and me? How many did we get? Children: Zero. Dr. Copley: The frogs got three.

You're going to go real fast, and then when you hear me you you have to stop. Okay? And then keep going. Then go as fast as you can. When you hear meow you go oh. Okay? Got it? Okay. All right. Now, guys, remember the mice. There are three of them, and they move real fast, except when the cat meows. Okay? Everybody got their estimation? Look how many they think. Look how many. How many do you guys think they are going to get?

Child: I think they are going to get five. Dr. Copley: Ahh. How many do you think they are going to get over there? Let's see. How many do you think? They think a lot. Child: I think four.

Dr. Copley: Okay. Here they go. Are you ready, mice? Remember, when you hear meow you have to go stop okay. Fast. Fast. Meow. Go. Go again. Okay. Meow. Stop. Oh. Look around. You are scared. Now keep going. Keep going. Keep going. One, Oscar! You can't be a pig about that. Bad analogy. [Laughs] Look at them go. Meow. Stop. Okay. Bring me that last cube. Come back, mice. You did great.

Let's give the mice a hand, everybody. Aren't they funny? Thank you, guys. Good job. Let's look at how many they got this time. Lots of them. They think you're going to get a lot because there are a lot of you.

Okay. Is everybody ready? Come on back guys, butterflies. Okay. No you are going to go. Start. Go. Go. Look. Swoop. Not fast. Swooping. Butterflies. Swooping. That's a real fast butterfly there. Be slower. They glide. Go ahead, keep going, Brandon. Get another one. Oh my goodness. My goodness. Faster. Yes, slow butterflies, graceful butterflies, yes. Keep pretending. Good job.

Go back and forth. Oh. Stop. Everybody come back with whatever you have in your hand and give it to me. Oh my goodness. This is going to be more than I can even count. Here, give them to me. Give me your butterflies guys and turn around and bow. Give the butterflies a hand. [Applause] Thank you. Didn't they do well? It's hard not to go fast because you want to go fast.

But let's see. This is so many. Look at this. Butterflies sit down. Look at all the ones you got. Look. If you estimated ten, that's a good estimation because this is a little more. Wow, yes. Three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen. Wow, butterflies! [Video ends]

Oh, I wish I could have shown you the entire tape. From the very beginning, children were thinking and making judgments about the amount of water the groups of animals could drink. Some children also began to think in groups. Although we didn't get Alfonzo's estimation on the tape, I watched as he looked at the two frogs and first put out the number of cubes one frog would get and then added the same number of cubes for the second frog. He was beginning to think in groups, and multiplying in his own way.

The variable of the meowing cat the children had to take into account as they made their estimation was certainly not part of a typical mathematics curriculum for four year-olds. However, as I observed -- as I hope you did -- some of the children took this idea into account, and often changed their estimations to accommodate the intervention. Please know that I am not saying that all the children in this class were able to do all of these things.

What I am saying is that this activity was appropriate for children of all levels and development, and all children were learning some mathematics. Most importantly, I was thoroughly impressed with the abilities of these four year-olds as they improved their estimations from the beginning of the activity to the end. They were amazing. Now, how does the advice that all children can learn math relate to the five strands of mathematical learning? It relates in a very important way.

All children must be given the opportunity to become fluent in procedures, understand concepts, develop competence in solving problems, make reasoning adaptations and develop productive dispositions. Understanding, problem solving and reasoning is not just for the few. Everyone must be given the opportunity to learn. Well, let's recap the advice we have shared. As we do, please note that whether you are a teacher, a parent, or a teacher leader, this advice applies to you.

First, focus on the child. Second, teach important mathematics. Third, facilitate children's engagement. Fourth, assess continually. And fifth, believe that all children can learn mathematics. We are now ready for our break. When we return, we will share more advice specifically for those who provide professional development for teachers of young children. See you in a few minutes.

Welcome back. The second part of this final math webcast, "Putting it All Together," is focused on advice for providers of professional development to you, the teacher leader. For the last 28 years I have been privileged to work as an instructional leader, serve as a coach and mentor, present numerous workshops and seminars and model lessons in early childhood settings, and I have learned so much. To conclude this series of webcasts, I decided to focus on the three pieces of advice that I feel are most important to share.

They are, one, listen to teachers and families of young children. Two, model, model, model. And three, address any barriers. Let's start with our first piece of advice. Let's listen to groups of teachers as they describe what they have learned about children and mathematics. Please know that these teachers all work with young children and have experienced a wide variety of professional development opportunities. As you listen, think about what you can learn from them, their strengths, and their professional needs.

Teacher: I think that there are some concepts in math that we as adults think are too difficult. Sometimes by estimation, like last week with the insects, just seeing the kids and being there, it's just a big eye opener and say, "Hey, we can do that with our kids." They actually get it.

Dr. Copley: Yeah. You all -- let's talk about that lesson just briefly. What could you assess about what kids could do in that lesson? Now these were not your children, although in your case they were. What did you notice about the group you had? Teacher 1: Just a concept -- estimation -- is a hard concept, even for us. And by them looking at their peers, at their classmates, and following the steps, and seeing their light bulbs, go on, what estimation means, that was a big eye-opener for me.

Dr. Copley: They could do it. Teacher: They could do it. Dr. Copley: And the estimations got better -- did you notice that?

Teacher 2: One of the things I noticed was what you just mentioned. The two girls I had, one of them, she noticed the

amount of children that would walk up, the insects, and that's how many she would start estimating, just by counting how many children were up there -- not exactly a full estimation of taking a drink of water, but how many kids were up there. That's what she would count. There were three children so I'm going to take three cubes. I found that interesting too.

Teacher 3: They had the opportunity to change the prediction and when I did it with the jar, they said, "I think there are ten unifix cubes in the jar. Put ten in the jar." So there was no time to change. They just said it and that's it. Maybe tomorrow you will change it, think about it, or count or whatever you think you are going to do, and, but with this activity they had the opportunity to change it.

Teacher 4: I've learned that their interaction and games, and the kids, this emotion they had because they think they are playing games. This is number one, you are doing it in a variety of ways. I have been doing the clapping game, one, one. And when I first introduce it to my kids, I observed them, they were like skipping. So the second time we did it, it was like one, two, three. Before we went on to the next number they were already predicting. So that's -- I mean --

Dr. Copley: Because they are physically involved. Scott: When you were in the classrooms we saw it actually work, and so many of our in-services, there's a presenter in there talking to us, telling us all this, but we don't see it work. You have to go back the next day or maybe days or weeks later, and then you try it.

You may not remember it exactly. But when we see you do it, we see it firsthand, and we see how it's successful. We develop our own ideas about how to apply it differently. Sometimes it doesn't always work, but we do at least get the opportunity to see it being effective.

Dr. Copley: Okay. Yeah. Teacher 5: I agree, again with the whole modeling. But at the same time -- video, watching it, a lot of people can be skeptical, as to, "Oh, you know, well, they know that because the teacher is helping them. Their little peers are helping them. They are telling them the answers." Being here and working with the children hands-on lets you see that, "No, I'm assisting." They are doing it on their own.

So our modeling an hands-ond work with the children as far as professional development was helpful. Teacher 6: Just yesterday I was assessing -- we were talking about the triangle and circle and how they are different, so I had the kids get up and go bring me something round from the classroom.

Well, Roelle -- if you knew Roelle, I wish you knew my Roelle -- somebody brought a dish from the home center. The dish had handles on it, so I said, "Is it really round?" Roelle said, "Yeah. It's round on the inside." And I went, "Yay!"

Teacher 8: One of the activities that I deal with my children is sorting, and all we did was sort shoes. And just -- we didn't need any extra materials or anything, just the shoes. What the children got out of it was wonderful. They thought it was the best thing to sort shoes. The patterns they came up with was awesome -- it was things I didn't see but some of the other children saw, you know. Zipper, nonzipper, strap. I mean, you can teach them -- that so much.

Teacher 6: You used the kids shoes? Teacher 8: Yeah. Teacher 6: What a good idea.

Teacher 9: It surprised me how much he has learning. The other day he was playing by himself and I got up and was monitoring, because it was right in the middle of the lesson. I saw him -- he was sorting the teddy bears, and there's eight colors, and he had little bunches, and I go, "What are you doing?" and he doesn't talk to anybody, he goes "Huuuhhhh", you know.

He keeps his hand over each individual pile. Then he took -- I have a huge tub of dinosaurs. And I told him, I said, "Wouldn't it be wonderful to put the biggest one here and the smallest one here?" I left and did something else. Well, lo and behold, I turned around, and he's got them all lined up. It was wonderful, because for him to be able to do that is just like, really phenomenal.

Miss Cheryl: We were working with the names of three dimensional shapes, sphere, cylinder. And, you know, we did it a few days, and then I jammed it in there, some other times. And now, if I call a ball a ball, my kids, especially the

higher kids, but even the lower kids, they say, "No, Miss Cheryl, that's not a ball. It's a sphere."

Or, "That's not a can. It's a cylinder. Come on!", like I'm the silly one. Their parents come and they say, "I'm surprised. I never knew my four or five-year-old could talk about these high concepts. A sphere. We didn't even know that, and yet my child is saying, 'No, Mom, that's not a can. That's a cylinder of beans, not a can.'" So it's amazing what, if you give them, they can do.

Dr. Copley: My second piece of advice is model, model, model. This is such an important recommendation. But what do you model? Think about the first part of this webcast. Should you model or focus on the young child? Yes. Whatever ideas or methods you are discussing, you should always bring it back to the child the teacher works with. Relate your ideas and suggestions to the child's development, their understanding of mathematics concepts, and their methods of learning.

Should you model teaching important mathematics? By all means, yes. If you can tell through the video clip shown through this entire webcast series, I believe in modeling, teaching in real classrooms, with real children, and the lessons taught should be in all in the content areas of mathematics, as well as lessons involving procedures, concepts, problem solving and reasoning. What about modeling facilitating children's engagement? Should you model that?

Of course. I find it especially helpful to observe with the teacher during center time and play activities. Together we walk through the classroom, observing and reflecting on the mathematics we see. As we identify "Where's the math?," we especially note children's engagement with mathematics and talk about how that can be continued or improved. What about modeling assessment? Another strong "yes".

You should share these assessments of young children during observations, and together the teacher and you can reflect on your assessments, children's strengths, and discuss further opportunities for assessing their needs. Finally, should you model the belief that all children can learn mathematics? Absolutely yes, but in addition, you should demonstrate and model a strong belief that all the teachers you support can learn to teach mathematics.

Teachers know if you believe in them, and the dispositions you model make a difference. Now, on to the third piece of advice: address any barriers. As instructional leaders you know there are many barriers to better mathematics teaching in early childhood classrooms. Unfortunately, you can't ignore them. In my opinion, one of the biggest barriers is early childhood teachers' lack of mathematical knowledge.

In many cases, teachers have had poor mathematics experiences or simply an insufficient amount of mathematics education. Because of that lack, teachers can become frightened of math and thus, frightened of teaching it. Remember this quote from the second webcast? "Who dares to teach must never cease to learn." This is something I always state as I teach teachers mathematics content that is new to them.

I firmly believe teachers need to know how young children begin to learn mathematics. I also believe they need to know how the math they learn at a young age is just the beginning of where they will go at a later age. Well, a teacher's mathematical education is not the only barrier to effective professional development. Listen to these providers of Head Start professional development as they discuss the barriers to professional development and the needs of their teachers.

[Video begins] Teacher 1: I think for some of our teachers, they have a math block. It's almost fear of math and mathematical terms. So to the point that you see they are afraid to teach anything other than numbers or calendar or, you know, basic shapes: circle, square, rectangle, triangle. It just -- it frightens them.

Dr. Copley: They haven't had good experiences themselves, and of course, that's hard to teach something that you don't particularly feel comfortable with. I think that's almost the number one -- the number one barrier I see a lot occurring. Good. Thank you. Others, other barriers you see?

Teacher 2: I think the lack of professional development in the area of mathematics -- everybody's focused, most times it would be the literacy. Professional development, helping those teachers know how to teach math. Dr. Copley: I see

that too. Just for a minute, let's say, how many hour presentations have you had on math in the last year? Can anybody remember any?

Teacher 1: One. Teacher 2: I had one. Teacher 3: We've had one! Dr. Copley: You look a little surprised there!

Teacher 3: Also, it's about this misconception amongst some of our teachers that with developmently appropriate practices and not feeling like they can do that intentional teaching, they feel like if they are doing an intentional lesson that is somehow not appropriate and they have a lot of misconceptions in that regard, too.

Dr. Copley: I purposely use the word intentional a lot because that's what the Position Statement says as well, and certainly it's in the Head Start Outcomes document. But the idea -- yes, you intentionally teach. I believe in play and choice and fun and just enjoyment, but if we only wanted to have fun, we would hire a clown, but we've hired a teacher. A teacher has some responsibilites. So you take what they enjoy -- what is fun -- and intentionally facilitate their learning. Why would I not do it?

Teacher 4: I see them being used as a study group to work with a group of teachers as far as being a mentoring coach and actually letting them use their different learning styles, visualizing the lesson, and then going in and working side by side with them. Let's do the lesson together, let's break down the steps.

A lot of times there's no follow-up -- like you said, we go to the workshop, it's a one shot. I'm in there by myself. Now it's over. I have intentionally taught because I understand what I did, but what does that mean? I'm finished. What does that mean? Where do I go next?

Teacher 1: Something I found fascinating just this past year was the learning style quiz on all of our teachers prior to starting training with them. We found out that 90 percent of them were kinisthetic learners, when 10 percent of the population are typically kinesthetic learners. That was fascinating to me. Everything had to be experiential, everything had to be hands-on. Everything had to be something they could see and do, so it would become part of their experience.

Something that I would like to see happen is using that webcast and also adapting it into something where it's in the classroom. They are experiencing it with their children, with someone being there, being a mentor coach, like you were saying, and using that as a discussion starting point.

Teacher 2: One of the things we have instituted is what we call help sessions. We provide support and services to teachers after the workday. So I see the webcast being used as an instructional tool during that, those sessions. And I like the outline, the way you have it set up, where you tell them what the concept is -- not only what the concept we are going to learn, but why that concept is important and then how you do it. I think that's what they need to know.

The what, how, and how you implement it. So I see you being used during our help sessions as that, where we as instructional coordinators can go in and provide the follow-up and the support that sometimes is lacking from professional development, so I do see it as a great instructional tool.

Teacher 6: ...because the webcast can be used on multi-levels of your teachers, depending on where they are because some are at different academic levels. Like she say, some of them, "I know how to do it, but I can't articulate the why I do it."

Sometimes because we're into so much standardized testing, and we have to validate what we do with our children, it's very important that we try to work with teachers to articulate the "why". There's just enough research for them to validate "why I'm doing what I'm doing in my pre-K classroom." So it's not overly research based, "I don't have to quote a lot," but when your principal walks in I can explain why they are floating things they shouldn't be floating. [laughter]

You know, or measuring things they shouldn't be measuring, or comparing. So I'm able to show that, because my principal wants to know, "What you are doing to meet whatever objectives that I have." So it's important, the ones that

are on that level and that are ready to articulate the how, and then the ones that need to know, "What do I do with these unifix cubes?"

Dr. Copley: Yeah. You addressed a really important issue, and I think it is a barrier that can occur as well. You have people at all different levels to talk about differentiated instruction, oh my. And there are teachers who just haven't had any experience teaching math and hate math.

And then you have people who maybe -- I know this is true. "I used to teach high school math but now I want to be home with my children so therefore this is my job." And oh, my, that math is very inappropriate, that they are trying to do. So you have people at all different levels. And also the ones that have always done it this way. Those are sometimes the hardest. [Video ends]

Although we are nearing the end of this webcast series, we are not finished with this mathematics initiative. I know my Head Start colleagues want you to stay tuned for more ideas, and a list of supports that will be provided to you in the coming months. Before I turn this webcast back over to Amanda, I would like you at hear some advice that was offered to Head Start by this group of professional development specialists. Listen as they talk about their ideas. I bet you will hear some of your own advice.

Teacher 1: I think it would be beneficial to see an entire lesson done from start to finish because I know -- we have a lot of teachers who cannot perform a quality lesson from start to finish.

Teacher 2: They can do snippets of a quality lesson, but the whole lesson cycle -- in a way that's developmentally appropriate, using manipulatives, gets a little complicated for them. The intro, the manipulatives, moving it to a new level, so even though I know sometimes they don't want to watch a whole lesson, I think it is beneficial. It has benefits.

Dr. Copley: Okay. Good. So whole lessons, kind of ideas, and... Teacher 2: And for the whole lesson it would be nice to have it with stopping points. You know, we're going to view the introduction, and then questions, and then, what else could you do? Can you -- any other ideas? And maybe have them practice with each other or, you know, to have the webcast be an interactive -- like you would be in a class.

Dr. Copley: Yeah. Something I have actually done at the university level, where we could stop and we could talk about this, and do another part. It might be helpful. One of the things I'm wondering about, and you know it's a huge issue, and that's the idea of assessment. And I have to say, I'm not asking here now about labeling kids or deciding, putting them in a group, that kind of thing, and not a standardized test, that kind of thing. I'm talking about the assessment that you do during teaching.

Where something happens, and you go, "This isn't working. This child needs more of this" and you used the word "scaffolding", which I think is so critical. Something like that, to me those seem like just such things that we need, and of course I haven't been able to do that in a webcast because we have been really kind of trained on the content. But what about that? Do you need more stuff like that? Would that be helpful?

Teacher 3: Very, especially assessing kids just by asking a question. Many times we find that teachers are drilling the kids. "How many is that? Can you tell me what that number is? What is that number? How did you come up with that answer?", you know, so... [laughter] Sorry.

Dr. Copley: No, but that's true. That is so true, so true. It's like it's a drill sergeant, and there's only one answer, and you better give it right away or you're in trouble. Yeah. And the more interesting question is always, "My, that's interesting. Why do you think that?" Many kids have trouble verbalizing, of course.

But what is so neat, is what I usually do, is go, "Is it because the sky is pink?" You know, I come up with something outrageous and then they go, "Oh, it's blah blah blah blah blah." So it's really fun for me to do that. Once you start doing that, though, you have to change your lessons, because there's not just one way to go. Suddenly they say, "Oh my, that means we have to go over here." That kind of thing. Yeah. Good. Good. Anything else you think would give

you support either in video clips more or other supporting materials?

Can you think of anything else? We of course want to get these on the website so people can access them easily. And I also want to support you all in this because we are smart enough to know this webcast is not doing with professional development. You can sit there all day and nobody does professional development. You are the ones to implement it if it's done effectively. An so, just think, are there any other supports you need? I would say money would be nice, too. [laughter] because I know you're stretched too thin already.

Teacher 2: But as she said with having the video clips with more children where you can say, "Stop, start, ask this question." It's the same thing as trying to do a train the trainer module for it. You know, I can look at the way a path with my limited skills as a trainer, you know, whatever I do, I can make up something and go along.

But it would be nice if it came out that way because, you know, we all know what our training dollar budget looks like. So a train the trainer module makes it look favorable for everybody for professional development, and do it in a consistent, concise way.

Teacher 2: The math initiative is a long time coming, but the Office of Head Start -- you know, but sometimes even your favorite foods, you get tired of it. Language and literacy we have digested for many, many years. [laughter] You know, even when you're eating a slice of pizza, you're like Mmmm.... So I think the math initiative is a long time coming, and if we could -- we really have language and literacy down. I think we got it and there's enough training modules out there for it.

But if we can keep getting more of those skills that I don't think they think that preschoolers really can digest. Even science -- I'm waiting for the science initiative. So if there's anything I would like them to know is keep it coming, the math and the science. Please keep it coming and don't drop it. We need more and more to reinforce it. We need the national, and it has been wonderful, the webcasts have been wonderful, but we'd like some little state pod trainings to send our managers, leaders, instructional specialists to.

[Video ends] Dr. Copley: Finally, I want to express my sincere appreciation to all of you for allowing me to share my passion for math, and especially for young children. Thank you. I know you will continue to learn and teach mathematics for young children everywhere. Now, Amanda, what support should we look for next?

Amanda: Thank you, Juanita. First, let me say that this series owes its success to you -- your depth of knowledge, your talent, and your dedication to these productions. We at the Office of Head Start are deeply indebted to you for providing high quality, professional development experiences that will be used by early childhood education specialists and practitioners for years to come. Again, thank you. Dr. Copley: You're welcome.

Amanda: We have enjoyed having you as part of our community. People may not recognize it, but once you are part of a Head Start community, you will never get out, and we have been mostly glad to see you practice what you preach. It has been truly inspirational. As we have heard in the video discussions, there are many ways to use the webcasts and video clips moving forward.

I would encourage you and your staff to watch segments together, take the opportunity to discuss the content knowledge they need as a background for mathematical education and map out strategies for intentional planning of individual and group learning experiences. As you delve deeper into each topic, you may feel the need for additional guidance or information.

Please continue to submit questions by typing them into the "Ask a Question" field on your browser, submitting them to the email address on your screen, or by contacting your center's technical assistance provider. As we close out this last webcast, we don't want to think of it as an ending but the beginning of many conversations on "Where's the math? " All of the webcasts and viewing guides are available on the Early Childhood Learning and Knowledge Center.

By archiving the webcasts on the ECLKC, we are providing a professional development resource that is rich in content, full of examples, and in a format that can be adapted to meet your needs. While accessing the archived

webcasts, we ask that you acquaint others, not only with this series, but with the multitude of other resources available on the ECLKC as well as through Head Start partners like Sonoma State University. We also ask that you stay tuned for further Head Start math initiative support and training opportunities.

Whatever way you choose to use these resources, keep in mind that by participating, you have taken the initiative and become part of a learning community with the aim to improve and refine mathematics instruction for young children. We applaud you for taking this important step, and for continuing to seek professional growth opportunities for yourself and your Head Start staff.

We at the Office of Head Start recognize that the benefits of your hard work enrich not only the capacity of the Head Start program as a whole, but the lives of thousands of individual Head Start children and their families nationwide. Thank you.
-- End of Video --

-- Premalink for viewing (requires Flash and javascript)

http://videos.sorensonmedia.com/HEAD+START/000192-OHS+Math+Web+Cast+6-2007-SD360p/acc4b44dH09e2d4d20V9b25o3e259a6d28fc