Assessing & Developing
Math Concepts
May 2021
Vol. 6 No. 1

Stay Connected!

Kathy Richardson is the author and developer of the Assessing Math Concepts (AMC) series of assessments and the Developing Number Concepts (DNC) series for Kindergarten through Second Grade Mathematics. Kathy, Program Director for Math Perspectives, is one of the most respected early childhood mathematics educators. Kathy answers questions from teachers across the country who are using AMC and DNC. If you have questions for Kathy, please send them to Math Perspectives at info@mathperspectives.com.

Back to School after Covid: Swimming Upstream or Going with the Flow – *from* Kathy Richardson

We are in a unique time when the trauma of the COVID pandemic has forced us to look at our lives and evaluate how we live them in a way that focuses less on things we have always taken for granted and believed "this is the way it has to be." We found out that many things that "had always been that way" weren't that way anymore. Remember when the lighting on a television show had to be just right and any flaws had to be hidden? And then we saw those same people at home, with poor lighting and less than perfect hair and make-up, who forgot to unmute their mike, who were just people after all. Remember when closing a University because of snow was a really major event and if it happened during Finals, it was a tragedy? And then whole universities closed down one after the other, even sporting events were canceled. It wasn't just universities that closed. Every family in the country was affected when elementary and high schools closed. How could life go on when these kinds of things were happening?

We can't say that the changes we lived through were easy or without major consequences for people, but we did find out we could handle them. We could adjust. We could be more honest and more real. What if we took these experiences and lessons and looked again at what really matters? Maybe we could do less of trying to impress everyone with our competence and instead dealt honestly with our issues and concerns.

What if we started considering children's well-being and emotional needs as more important than test scores? What if we wanted our children to feel a sense of belonging at school and we wanted to see them engaged and excited about learning more than we wanted them to give fast answers during timed tests? What if the local newspaper wanted to report how engaged children were in their daily work more than they wanted to report test scores or the kindergarten Thanksgiving celebration?

What if we realized that a learning environment that was based on what we know about how children learn and honored each child's personal journey learning to read and write and do math, would ensure children would learn more of what they need to know and would naturally be more equitable for every child.

Imagine what would happen if instead of making children swim upstream trying to do things they don't understand, we supported schools that went with the flow of what children need.

Which way will take us where we want to go?

Q&A ASSESSING MATH CONCEPTS: Intervention

Question: As a school district we are working on entrance and exit criteria for tier 2 and tier 3 math intervention. Currently our K-2 teachers are using AMC data to differentiate small groups and independent practice for their students. Could you offer any guidance around using AMC data to identify students needing T2 and T3 support? We hope to use AMC as a diagnostic and growth measure, but I'm wondering if/how AMC data could be used as a qualifier for intervention.

Thanks for your time. —**Instructional Coach, *MN***

Answer: I think AMC would work well as a qualifier for intervention. I have some suggestions for assessments that would be appropriate to give at the beginning of the year that I think would identify the right children. You may have other ideas or questions so please feel free to share them with me.

I would suggest giving the assessment in the beginning of the year (sometime before mid Oct.) You can decide what the criteria should be ahead of time or it may be better after seeing the results. In general, I have found that children who get an I (or sometimes a P) could be identified as Tier 2 and those getting an N as Tier 1.

Kindergarten - Counting Assessment Part One, Task 1

Tier 2 if unable to count a pile of 7
Tier 3 if unable to count a pile of 4

First Grade- Number Arrangements

Tier 2 Able to recognize 3 but not groups that are larger.
Tier 3 unable to recognize small groups of 3 or larger

Second Grade Ten Frames

Tier 2 Adding Ones to 10 (I)
Tier 3 Adding Ones to 10 (N)

Let me know if this is helpful or if you need additional information.

Thanks, Kathy

Follow-up Question:

Hi Kathy,

Thank you for your interest in helping us on our math intervention journey. Our district is working to set some parameters around WHO gets math intervention and WHAT instruction looks like during intervention time. In K-2, we have decided to use AMC to identify who needs additional support. I have suggested some eligibility criteria in the document I sent last week. We will use the AMC data to inform instruction and DNC for planning activities.

We will be monitoring our intervention programs closely during the 2021-22 school year. I'm happy to share the results of our journey along the way. I agree, it could be helpful to many teachers.

I would welcome any feedback or suggestions as I'm sure you have helped many develop instructional models to support striving students.

Keep in touch. —**Instructional Coach, *MN***

Answer:

Hi,

I was in the process of writing this email when I got your last message. First, I want to share some feedback and suggestions for the entrance criteria.

Kindergarten - I had to think hard about why I don't think Changing Numbers should be used to determine the need for intervention in kindergarten. You can get lots of good information about a kindergartener's understanding of number when you assess using Changing Numbers, but I think some children just need more time to begin to see that smaller numbers are part of the larger numbers. What I am suggesting instead is One More to 8 for Tier 3 and One Less from 8 for Tier 2. This will find those children who are not yet paying attention to how numbers are related to each other.

First Grade - About the Hiding Assessment: Identifying "missing parts of numbers" is much harder than most realize. Teachers often feel they can get children to learn these parts if they work on them enough. But there are unintended consequences when teachers try to get kids to memorize them. The problems generally start in kindergarten, but I think what happens in kindergarten can help us know the issues for other children struggling with parts of numbers in First Grade. For example, kindergarten children who "know" parts of 5 will shock teachers if the teachers ask them about parts of 4 or 6. Many children will say what they learned "goes with" the numbers they have been working on. In other words, If you work with 4 instead of 5, and say, "I'm showing you 3, how many are hiding?" a certain number of children will say 2 because 2 goes with 3. Or if you go on to 6 with children who have learned parts of 5 in kindergarten, many children who have memorized the parts will have no idea how to figure out what is hiding. They only know what they worked on. Another problem with memorizing parts is what happens when children go on to Part Two and are asked to think about "What if?" questions. I think you can use Hiding but my suggestion is to have the Hiding criteria be Parts of 4 for Tier 2 and Parts of 3 for Tier 3. Or use Number Arrangements Level 1 to determine if they can Identify Parts of Numbers.

Second Grade: I think you may want to do Ten Frames: Making a Ten and Adding Ones mid-year. My suspicions are that you will find lots of children at P or I. I would suggest Tier 2 be those who get a I on this and Tier 3 would be those who get an N. In the Spring, I would suggest using Grouping Tens: Composing Tens and Ones to 100 with those who get Ps identified for Tier 2 and Is or Ns for Tier 3.

I make these suggestions based on what my experiences and analyzing data have shown to be likely. But every district does not have the same results on the assessments in terms of percentages of children at each stage of developing number concepts. So, one district may have 20% of kids who can't combine tens and ones and another district may have 3%. There are many factors that contribute to what mathematics children know at any particular grade level or time of year and could influence what criteria you decide to use.

This is because some children come more ready for school than others and can build on that. The age children must be to enter school also varies. If the cutoff date is August 31st, that is much different than when the cutoff date is Dec. 1st. Some districts lean towards telling parents to keep the youngest children home another year. Some districts have really strong math programs where children's time is spent on math that helps them make sense of numbers rather than programs that are confusing for them. In any case, no matter what the cause, we need to find out what the children actually know and give them appropriate experiences that build on their knowledge. If you find the criteria you set don't identify the right group of children, you need to be able to adapt them based on what you are finding out. You will be able to use the same assessment but you could establish different criteria if too many or too few children are identified.

I am really pleased that you are finding my work helpful in getting ready to move from reading to math. You are already used to the various ways children respond to instruction. Some just need a little extra time and will make really good progress but some are just going to take longer than you expect. The math assessments uncover what children understand and not just what they have learned to do. It is more like comprehension than learning the sounds of the letters. This means there is lots to consider when looking at progress. When we give children appropriate experiences, they will make more progress in the long run whether or not their

progress seems slow in the short run.

There are some thoughts that come to mind when I think of using the assessment results to plan instruction. I always had a sense of urgency when I worked with my students. I didn't want them to do things that wasted their time. But what I had to keep in mind was I wanted to know what they really knew or didn't know and not just make them "look like they know". It is like learning parts of 5 in kindergarten. It may look like they know but if they give the same responses when working with a different number, it means they have learned what to say and don't really understand what they are saying.

My hope is that children will be given the time they need to learn. This does not mean expecting less. It just means paying attention to the clues that tell us what they understand and do not understand. For example, if you ask a child to tell you how many when you have taken one away from a group and they say a larger number instead of a smaller number, you can ask, "Are you sure there are 13 now? If the child laughs or says, "I went the wrong way." that means one thing. If they check and see and recognize the error that means another thing, If the child just looks puzzled or insecure that means something else. One of the underlying goals is to help struggling kids know when they know and when they don't know. Many are so used to checking with the teacher to see if they are right, they don't trust their own sense of knowing.

I am very interested in what unfolds for the children you and others will be working with. I am glad you plan to stay in touch.

Best, Kathy

If you're using Assessing Math Concepts and have a question regarding any of the nine assessments, we'd love to hear from you. Please email us your question to info@mathperspectives.com.

If you are using the paper Student Interview forms and would like to receive information on the Web-based version or professional development, please contact us at info@mathperspectives.com.