

Assessing & Developing Math Concepts



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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.

ASSESSING MATH CONCEPTS: Counting Objects

Q Is there a way to override where the assessment package takes me next? For example, I was assessing a young man this morning who could not count the unorganized pile in the counting assessment. His problem was that he was just pointing and couldn't keep track of which blocks he has already counted. He was not successful until we got to 12. If I followed the assessment protocol I would have had him count out a pile of 5 for the second task and this would have been his benchmark the third task of +1 and -1.

Because task 2 is very different from task one (in that the child is creating a new pile, thus being required to move the blocks which usually results in greater accuracy of counting for children who lose track) I had the child create a pile of 18, which he did quite successfully. He continued to successfully complete the +1/-1 of task 3 at the highest level.

If I had followed the test protocol I would not have learned that he had the ability to function at the higher levels. How would you folks have me address this through AMC Anywhere?
Thanks. - Fairview, OR

A I want to address your question about overriding the path of the assessments, but first I want to give you some of the thinking behind the path for the Counting Assessment.

The path for the Counting Assessment has been set up the way it is for many reasons. The major reason is that I think that Counting an Unorganized Pile is foundational and keeping track is a major indicator of what the child understands about counting. There is always much to learn than can be recorded in a assessment. I wish I could have observed the student you worked with. I would be looking to see how meaningful the task of counting seems to be to

him. Was the large pile overwhelming to him and he pointed because it just seemed too big to really think about? How far off was he when he counted? How did he know when to stop? Did he know the sequence? Did he know how many he "counted" when you asked, "How many did you count? When he counted 12 objects, did he still point and was successful only because the number was small enough for him to keep track visually or did he move them? Was he confident once he got to this number? If he was successful at 12, you should have been directed to make a pile of 9. I think of this as rounding out the picture of what the child can do. It isn't as precise a range as for Task 1. Counting Out a Pile is often harder for a child than counting a pile because it asks the child to hold a number in his head. I am interested in the fact that your student had an easier time making a pile of 18 than counting a pile of 21. You said he was able to count out 18 successfully because he was able to keep track. That implies that counting is a meaningful task for him, which is not commonly the case when a child points without keeping track. I decided not to have the children go on to count out 18 if they are successful counting out 9, partly because they usually can't count out 18 and partly because the information gained is usually not worth the extra time it would build into the assessment. One more and one less is less about understanding and more about knowing number sequence patterns so I think it makes sense to start at the place you want to get more information, remembering that children can be successful with the number patterns without fully understanding the numbers. If you find that a child is able to count out 18 but it does not show up because of the protocol, you would have to indicate that in the notes.

I think of the assessments as the beginning, not the end. We get the information we need to understand where to start instruction with the child (and if we reassess, we will find out what progress they have made.) When we do an assessment, we will almost always have some questions that will guide what we want to look for when working with the child. The Counting Assessment has the most complex path of any of the assessments. For most other assessments, you choose a number to start with and the path is more straight forward.

I hope this is helpful to you. Let me know if you have any additional questions.

~ Kathy

ASSESSING MATH CONCEPTS: More/Less Trains

Q I am wondering what the rationale is behind why we do not use the More/Less Trains assessment in some grade levels. Several teachers in my school have this question. - Round Rock, TX

A When teachers are first learning about the assessments, we don't want them to feel overwhelmed so we generally recommend other assessments as important to start with.

However, when teachers are familiar with the assessments and the information they can get from them and feel they have time for an additional assessment, Assessment 3: More/Less

Trains can provide good information for K through 2. There are 3 levels within the assessment. Level 1 checks to see if the children can use a train they know to figure out how many in a train they don't know if the trains are lined up. This is a prerequisite for comparing. Level 2: ask "How many more in this train than the other train" when the trains are lined up. This is important information for First Grade. Level 3 asks children to compare two unorganized groups. This is often good information for 2nd grade.

So, if teachers are interested, have them try the assessment and decide if it is helpful.

Thanks for the question. Let me know if you have any other questions.

~ Kathy

DEVELOPING NUMBER CONCEPTS: How do I set-up my DNC Stations for a range of learners?

Q Can I have students working at different levels on the same station at the same table, or should I have all the children at one level at one table and children at another level at another table? - *Evanston, IL*

A I recommend that children of all levels who are working with a particular station all work at the same table. There are several reasons for that. First of all, the learning stations are made to meet a range of needs. The tasks are "expandable." That means the same task can be appropriate for children at various levels.

Sometimes, children work with a different range of numbers than others at their table. For example, one child may be measuring lengths of yarn that go up to 6 Unifix cubes long, another child might be measuring lengths of yarn that go up to 10 Unifix cubes long. Or maybe they all are measuring the really long pieces of

yarn, but one child is seeing how many toothpicks long the yarn is while another child is measuring with small paper clips. In a first-grade classroom, children could be working at the Subtraction Grab Bag station. One child could be putting in 8 tiles, and pulling out 3 and writing $8 - 3 = 5$ without looking in the bag. Another child might be working with 8 tiles, too but when she pulls out 3, she takes a minute to think about it and then peeks in the bag before she writes anything. In second grade one child may be using Paper Shapes and organizing Unifix cubes into tens to see how many tens would fit in the shape. Another child may be measuring two Paper Shapes and then finding out how many both shapes hold all together.

When children are working at the appropriate level, they are more likely to be focused and engaged with their tasks. In a classroom, where the children are expected to work with their "just right" task, everyone just does their work without judgment of the children around them. No one has to go to the table for the "low group" and no one goes to the table for the "high group."

When the teacher has created a learning environment that is safe for everyone, where children are allowed to choose where they want to work, and have learned to be self-directed learners, children will work at the level most appropriate for them. If children begin to work with a task that is too easy or too hard, they know how to find the task that is just right. If a child is working at a level that is too low or too high and not changing to a different level by themselves, the teacher can help them figure out what is "just right" for them. Sometimes a child can move by themselves to a higher level because the level they have been working with has become too easy.

You can read more about how to create this kind of learning environment in *Time For Math: Creating a Learning Environment That Works for All Students* (pages 12-19).

~ 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.

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