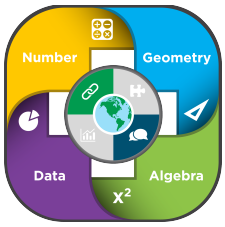
This document provides a summary of **Recommendation 3** from the WWC practice guide *Teaching Math to Young Children*. Full reference at the bottom of this page.

Use progress monitoring to ensure that math instruction builds on what each child knows



Progress monitoring is a helpful method for making sure that math instruction is deliberate and useful for children. Teachers can monitor progress to tailor lessons and instruction based on children's current math skill levels. This method helps to ensure that children are receiving math instruction that is difficult enough so that they are always learning.

How to carry out the recommendation

1. Use introductory activities, observations, and assessments to determine each child's existing math knowledge, or the level of understanding or skill he or she has reached on a developmental progression.
2. Tailor instruction to each child's needs, and relate new ideas to his or her existing knowledge.
3. Assess, record, and monitor each child's progress so that instructional goals and methods can be adjusted as needed.

Potential roadblocks

1. How can I maintain order in the classroom when breaking the class into small groups?
2. I am already required to give standardized assessments. Can I use my existing assessments to tailor instruction?
3. What if I do not have required assessments, or the assessments do not fit well with the skills that are targeted in the developmental progression?

Reference: Frye, D., Baroody, A. J., Burchinal, M., Carver, S. M., Jordan, N. C., & McDowell, J. (2013). *Teaching math to young children* (NCEE 2014-4005). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. https://ies.ed.gov/ncee/wwc/PracticeGuide/18

How to carry out the recommendation

1. **Use introductory activities, observations, and assessments to determine each child's existing math knowledge, or the level of understanding or skill he or she has reached on a developmental progression.**

   To begin progress monitoring, teachers should find each child's level of skill and knowledge in math through introductory activities, observations, and formal assessments. Teachers can use *introductory activities* to present new concepts and determine what students can complete independently. For example, after the instructing children on shapes, teachers can include an activity in which the children cut out shapes such as circles and triangles from magazines. Teachers can then ask the children to discuss the shapes and their different sizes. Such an activity allows teachers to see whether the children know shapes and are able to talk about them.

   Observations include addressing specific math competencies through activities and watching children in their process of completing the activities. While children are engaged in the activities, teachers can ask questions to see if they are able to verbalize their process for completing the activity. If children are able to complete the activity correctly and explain their process verbally, they can move on in the lesson.

   Teachers can plan instruction and lessons by looking at children's overall performance on *formal assessments* to identify their skill levels. Teachers can also look at children's answers to specific questions or in specific sections of assessments for deeper understanding of their knowledge and skills. This information can be valuable in selecting appropriate goals for instruction.

2. **Tailor instruction to each child's needs, and relate new ideas to his or her existing knowledge.**

   Teachers should use learnings from introductory activities, observations, and formal assessments to identify where children's knowledge and skills place them in the developmental progression. Doing so will help teachers determine next steps in the learning process and create instructional activities aligned to the next levels. For example, when children demonstrate they can use subitizing to determine which set of objects has more (for example, a set of four has more than a set of three), they can use meaning counting to determine which collection contains more. Once children can count a set of 10 objects, teachers can include a set of 11 or more objects to increase the difficulty. See Table 3 on page 13 of the practice guide referenced on the first page of this document for a sample developmental progression related to number knowledge.

   Teachers should not only create activities aligned to the next level in the learning progression but also connect new knowledge to children's interests. For example, if children like art, teachers might create activities that include drawing, such as having children draw eight dogs and 10 dogs and then describe which set has the most dogs.

   Children might be at different levels in a learning progression, so it is helpful to group them by level for some activities. For example, some children might be able to count sets of 10 objects whereas others might be able to count sets of eight. Teachers can group students who

can count to 10 and group those who can count to eight. Then, they can observe the groups and increase the difficulty of the activity as the children's ability levels rise.

3. Assess, record, and monitor each child's progress so that instructional goals and methods can be adjusted as needed.

Teachers can use progress monitoring to assess children's progress through introductory activities, observations, and formal assessments. Progress monitoring involves first selecting an activity using a developmental progression then repeatedly cycling through a process of implementing the activity, assessing children's levels (using the developmental progression), and planning or selecting additional activities. Teachers might use a checklist such as the one below to monitor progress during a sample activity.

Progress monitoring checklist

Activity: Which set has the most triangles? Set 1: ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ Set 2: ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲	**Student**	**Date**	**Counted Correctly?**	**Decided Correctly?**	**Errors Made**
	Suzy	November	Yes	No	Selected set 1 as having more triangles
	Billy	November	No	Yes	Counted 8 twice for set 2

Note. Adapted from Example 8 on page 40 of the practice guide referenced on the first page of this document.

When assessments show that children's math knowledge and skills are growing, teachers can plan activities, following the developmental progression, that are increasingly more difficult and continually assess children's math levels as they complete the new activities.

Potential roadblocks and how to address them

Roadblock	Suggested Approach
How can I maintain order in the classroom when breaking the class into small groups?	Small groups can sometimes create a loud and potentially unruly classroom. Understand your students and place them in groups that will not cause conflict. For activities in which you mix the ability levels of children in groups, ensure that there is a balance between the levels. Make sure that activities are engaging to children by making the activities interesting and challenging.
I am already required to give standardized assessments. Can I use my existing assessments to tailor instruction?	Teachers can look over the questions in an assessment, choose the questions that will provide the most information on children's math levels, and then review the children's answers to monitor their growth through the learning progression and adjust instruction. If other adults are helping in the classroom, teachers might ask them to use a checklist like the one above to help monitor children's ability levels.
What if I do not have required assessments, or the assessments do not fit well with the skills that are targeted in the developmental progression?	Teachers can develop activities that are intended to assess children's ability levels when assessments are not available. For example, teachers can use the sample checklist above to observe children during an activity to see whether they demonstrate the knowledge and skills learned. Both assessment and observation can provide information on children's knowledge and skills.

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For more information on the research evidence and references to support this recommendation, or for more detailed explanation from the What Works Clearinghouse committee who developed this recommendation, please refer to the practice guide cited at the bottom of the first page of this document.