



# KENAN FELLOWS PROGRAM

FOR CURRICULUM AND LEADERSHIP DEVELOPMENT

# Making Math Count

A project from the Kenan Fellows Program in conjunction with the Department of Public Instruction



Public Schools of North Carolina  
State Board of Education  
Department of Public Instruction



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Making Math Count: A three-part professional development series focusing on assessment and instruction in grades K–2.

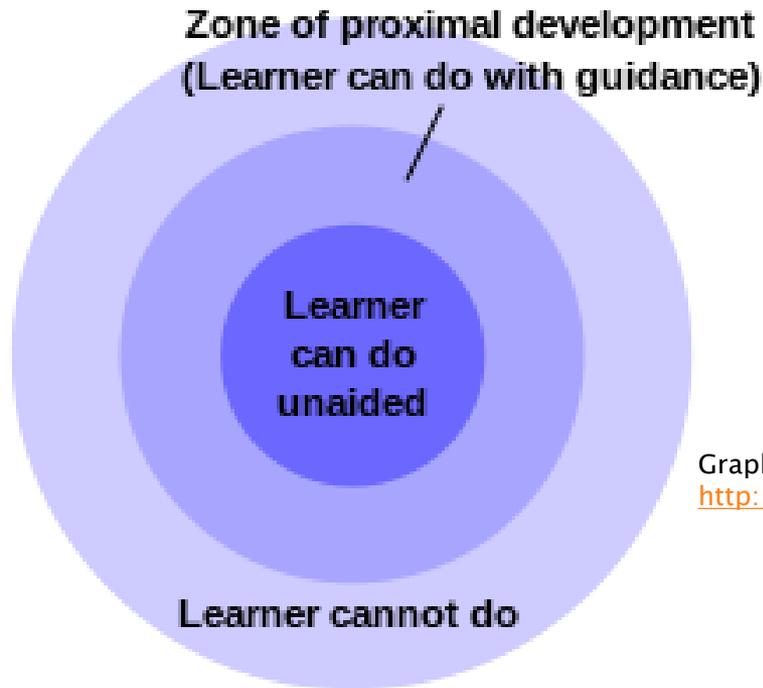
Chapter 2: Diagnosing a Student's Level of Understanding, Day 1



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# A Student's Edge

- ▶ When we find and instruct at a student's edge, we call this the zone of proximal development. This is where we must meet a student if we want learning to take place.



Graphic from

[http://en.wikipedia.org/wiki/Zone\\_of\\_proximal\\_development](http://en.wikipedia.org/wiki/Zone_of_proximal_development)



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3/7/2014

# How Do We Find “The Edge”?

- ▶ We find a student's edge by pinpointing key mathematical developmental stages. We must reveal what the student truly understands and also reveal where their misunderstandings begin.



# Developmental Stages in Math

- ▶ When determining a student's developmental stage, it is important to remember that these stages are NOT:
  - skills directly taught to children
  - procedures children memorize
  - children looking to the teacher for the “right” answer

*Adapted from How Children Number,  
Kathy Richardson, 2011*



# Developmental Stages in Math

## ▶ THEY ARE:

- Crucial mathematical ideas that students must understand if we want them to find meaning in math and learning.
- Understandings that are developed through purposeful instruction that builds on what students already know.
- Children looking to their own ability to think through math and make sense of problems.
- The gateway to students being successful in math!

*Adapted from How Children Number,  
Kathy Richardson, 2011*



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# Our Focus:

- ▶ A key developmental stage in math is a student's ability to compose and decompose numbers to ten.
- ▶ We want students to break apart all numbers to ten with automaticity and use this knowledge to generalize about our base-ten number system.

In order to help teachers discover students' developmental stages, the Department of Public Instruction piloted an assessment tool. Selected schools within the following districts participated in the pilot:

- Avery County Schools
- Bertie County Schools
- Charlotte–Mecklenburg Schools
- Cumberland County Schools
- Dare County Schools
- Guilford County Schools
- Halifax County Schools
- Haywood County Schools
- Martin County Schools
- New Hanover County
- Weldon City Schools



# The *Assessing Math Concepts* System

- ▶ The assessment and instructional resource the pilot schools used was *Assessing Math Concepts* (AMC).
- AMC is a series of formative assessments with correlating instructional strategies developed by Kathy Richardson.



- ▶ One assessment from the series that the pilot used is called the Hiding Assessment.
  - The Hiding Assessment:
    - Identifies a student's edge of understanding within composing/decomposing numbers through ten.
    - Is administered one-on-one with a teacher and student.
    - When a student's edge is determined, it is then matched with instructional strategies in order to move them to the next level of understanding.



# The Hiding Assessment

- ▶ The Hiding Assessment will give you a specific number range that a student is working on from 3 to 10.
- ▶ *Using the Hiding Assessment to find the edge of understanding is like finding a student's "Just Right Book" level.*



# The Hiding Assessment



- ▶ Kathy Richardson's Hiding Assessment is administered as follows:
  - A student hands you a particular number of counters.
  - Hide some and show the rest.
  - Say, "I am showing you \_\_\_ counters. How many are hiding?"
  - Continue for all combinations for that number, recording student's response and strategy.
    - Possible strategies to watch for: knows automatically, counts on/back, counts all
  - Pay attention to the child's body language as that can be revealing of how they got the answer.
  - Example: 3 counters
    - Cover 2 with hand and show 1, ask "how many are hiding", record student response
    - Repeat with Cover 1, show 2; Cover 3 show 0, Cover 0 Show 3.



# The Hiding Assessment



- ▶ Administering continued:
  - Begin with the largest number that you think the student knows quickly. Do not start with 10 counters as you are likely to get incomplete information. Many children know parts of 10 before they know parts of 7, 8, or 9.
  - Although the pilot schools used AMC's Hiding Assessment, other formative assessments can be used to determine this information. *An alternate assessment format is provided in the Supplemental Materials section.*

