

Enhancing K-5 Numeracy Skills: Designing Learning Experiences that Promote a Deep Understanding of Numbers

Sue O'Connell

Greater Ozarks Cooperating School Districts

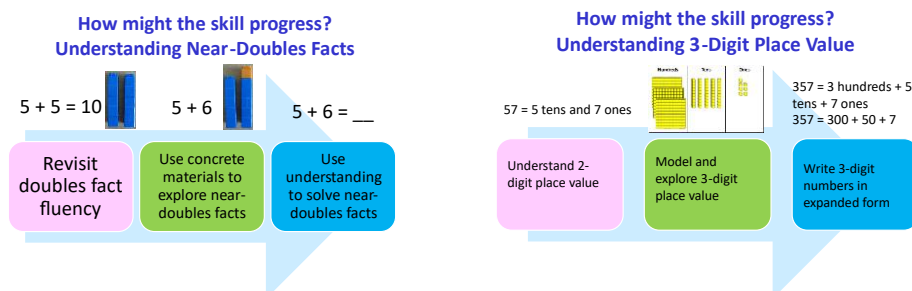
“Understanding number and operations, developing number sense, and gaining fluency in arithmetic computations form the core of mathematics education in the elementary grades.”

Principles and Standards for School Mathematics
NCTM, 2000

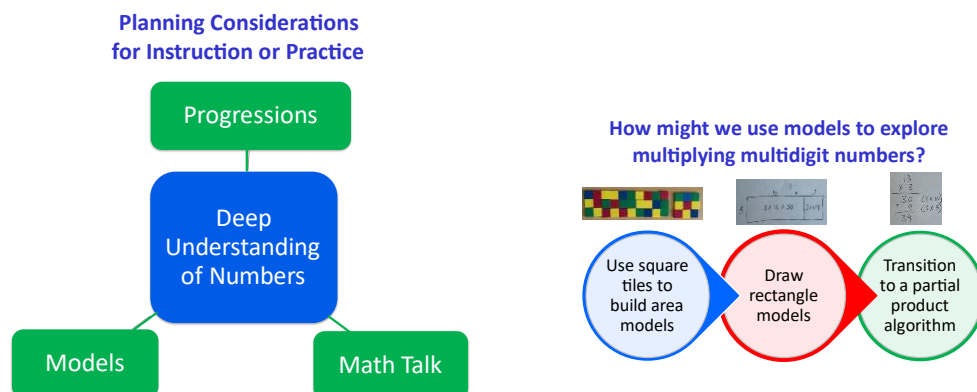
What skills help students understand how numbers work?

- Counting concepts
- Place value
- Composing and decomposing numbers
- Patterns and properties
- Understanding how operations work
- Understanding and fluency with basic facts
- Understanding and fluency with multidigit computations, fractions, decimals

How might attention to learning progressions support the development of number skills?





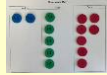
Considerations in Designing Lessons and Practice



What are the benefits of practice through tiered centers?

- Students work together and talk about the concepts.
- Students explore with hands-on materials.
- Students express their thinking with words, concrete materials, drawings, and abstract representations.
- Students apply their understanding to problems or game situations.
- We can observe and assess students' thinking.
- Students gain confidence and feel successful because they started at an appropriate entry level and moved through progressions to gain more complex skills.

Grade 2 Centers – Comparing 3-digit Numbers

<p>Roll 2 number cubes. Make the greatest 2-digit number.</p>  <p>53</p> <p>Compare with a partner. Write the comparison. $53 > 42$</p> <p>The one with the greater number places a counter on a balloon.</p> <p>The 1st to cover 10 balloons wins.</p>	<p>Pick 3 number cards. Make a 3-digit number and model it with base ten blocks.</p>  <p>Compare to decide which number is greater. $852 > 431$</p> <p>The one with the greater value gets a counter. The first with 10 wins!</p>	<p>Grab some place value disks out of a bag. Show them on a place value chart and write the expanded form.</p>  <p>$200 + 50 + 7$ $300 + 20 + 3$</p> <p>Compare. Write the comparison. $323 > 257$</p> <p>How do you know?</p>
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Students develop a deep understanding of numbers when we...

- ...focus on specific content (number and operation concepts).
- ...use instructional strategies that promote visualizing, discussing and reflecting.
- ...make connections to prior learning.
- ...design strong lessons and offer ongoing, targeted practice tasks.

Resource to Explore:

Navigating Numeracy Learning Progression Centers (hand2mind)

www.hand2mind.com/navigating-numeracy

Navigating Numeracy center kits contain grade-specific, hands-on, and interactive practice opportunities that guide K-5 students toward a deep understanding of numbers. Each kit contains 45 repeatable centers that span the number skills you teach across the school year. The tasks are engaging and focus on the critical number skills that are a priority in our math standards. Each kit contains a teacher's guide, student task cards, game boards, spinners, game cards, and manipulatives so students can explore the skills through hands-on tasks.

For more info on *Navigating Numeracy Center Kits* or to get samples, contact Michael Cox at

mcox@hand2mind.com