Unitizing K-2
NCCTM November 2, 2018

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It’s not that we understand what we see…
We see what we understand

Kathy Richardson quoting unknown source
Greensboro 9/2/18
Unitizing

1) Prologue – importance of thinking in units

2) The brain and subitizing

3) The disconnect between manipulatives and the numeration system

4) Learning to name numbers as about groups of ten
Connections Across Curriculum: Unitizing

3 ones and 2 ones
3 tens and 2 tens
3 tens and 2 ones
3/6 and 2/6
3/6 and 2/5

3X and 2X
3Y and 2Y
3X and 2Y
Review

1

2

3
Subitizing

This is a critical skill and may lay underneath early math number sense difficulties with addition and subtraction.

New Material!

Doug Clements
Number Sense and Instructional Choices
Number Sense and Instructional Choices
Number Sense and Instructional Choices

\[ 3 + 4 \]
• Count and count and count and count and count and land…

• Kathy Richardson
• Students get the impression that COUNTING is their only access point, their only solution strategy.
I can’t force a student to unitize ten by starting early...

Kathy Richardson
But, how do we best support them while they are learning to count? Also, emphasize subitizing & BAMT.
How many to make 10?
How many left over?
1 to make 10
3 left over
How many to make 10?
How many left over?
1 to make 10
0 left over
2 to make 10
5 left over
Connecting
Au/Oral, Visual, Symbolic

There is a disconnect...

We group objects by TENS but ... we run out of written DIGITS at 9

0, 1, 2, 3, 4, 5, 6, 7, 8, 9
The math concepts we teach young children are more complex than many realize

Kathy Richardson
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Solution: Explicitly Teach DIGITS
Solution:
Teach beyond 10 using circuit!

Sharon Griffin’s work
Counting by 10s
With REAL number Names

From Liping Ma and Cathy Kessel
Knowing Mathematics
Counting by 10s by Connecting to Understood Units
Counting by 10s and teaching base-ten numeration ‘naming’ system
What is 4 groups of 9?
We can name it lots of ways!

9 + 9 + 9 + 9
9 x 4
18 x 2
18 + 18
How do we name it
When we write
It as one numeral?

And what does that
Look like?
How do we name it
When we write
It as one numeral?
What discussions can you have with students when they see number naming as about groups of ten (rather than a string of words)?

Connecting written language with conceptual ideas

Students talking about digits, single digits, double digits and their values!
Questions?
What is 1?

“The idea of number is based on a division of the world into two levels:

the same and different”

- Denis Guedj

from Guedj, 1999, Numbers: the Universal Language
and from
Andy Warhol, 1963, Liz Taylor 10 times
In other words...

1 what?
One is one, or is it?