Building Number Sense with Subitizing

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Session Objectives

Define subitizing and identify how the two stages of subitizing are linked to counting and numeracy.

Describe how subitizing in early childhood lays the foundation for later success in mathematics.

Identify simple ways to incorporate subitizing exercises into the early childhood and elementary classrooms.
What is Subitizing?
What did you see?
How did you know how many?

Share your thoughts with your neighbor.
Coined in 1949 by E.L. Kaufman and supported by the work of theorist Jean Piaget

From the Latin adjective subitus meaning "sudden"

Defined as "instantly seeing how many"
researchers believed that counting did not imply a true understanding of number, but that subitizing did.

many saw the role of subitizing as a developmental prerequisite to counting.

it was suggested that whereas measurement focused on the whole and counting focused on the unit, subitizing focused on the whole and the unit; therefore, subitizing underlay number ideas.

educators began developing models of subitizing and counting.

researchers found that young children could subitize sets of one or two but were not able to count them.

yet, other researchers have agreed that subitizing is developed later, as a shortcut to counting.

SOURCE: WIKIPEDIA, CLEMENTS 1999
Types of Subitizing

**Perceptual**
Recognizing a number without using other mathematical processes.
Many children will instantly recognize and verbally label sets of items made of five or fewer before leaving preschool.

**Conceptual**
Recognizing a number pattern as a composite of parts of a whole.
Some children will be able to verbally label two sets of subgroups up to six and then one more subgroup when subitizing up to ten items.
What do you see?
What did you see?
Maria
4 years, 4 months

Me: “What did you see?”
Maria: “I saw 5.”
Me: “How did you see it?”
Maria: “I saw two, two, and one.”
Me: “I also saw five, but in a different way. Do you want to look at it again?”
Maria: “Ok…” I proceeded to show the card again and again she said, “I saw 5.”
Me: “How did you see it?”
Maria: “I saw two, two, and one.”
Omar
Just turned 4

Me: “What did you see?”
Omar: “I saw a square with a dot in the middle.”
Me: “How many dots did you see?”
Omar: “Five. I saw four and one in the inside.
Me: “I see how you saw that.”
Omar: “Hey, I see two on the top, one in the middle, and two on the bottom, too.”
Me: “Yeah, I can see it that way too.”
Why Should My Students Be Doing This?

The development of pattern recognition.

The understanding of numbers and number sense.

Building a foundation for algebraic thinking.

It's efficient.
But Shouldn't They Be Counting?
But Shouldn't They Be Counting?

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But Shouldn't They Be Counting?
6 + 7
$6 + 7$
Subitizing and Multiplication

The Concrete

The Representational

The Abstract

$3 \times 6 = 18$

SOURCE: GFLETCHY
Subitizing and Multiplication
How Do I Get Started?

Classroom Routines
Transitions
Small Group Games
STEAM & Literature Integration
Brain Breaks

Classroom Routines

Number Talks

Attention Getters

"Show me four!"

"Show me one more than four!"

"Show me one less than four!"

"Show me four on two hands!"

Brain Breaks

"I Can Show Numbers In So Many Ways"

"Subitize Up To 5"
Transitions
Small Group Games

Card Games
- War
- Go Fish
- I Have, Who Has?
- Memory
- Flash It!

BINGO

Tiny Polka Dot

Which One Doesn't Belong?
Which One Doesn't Belong?
STEAM & Literature Integration

**Literature**

- How Many? by Christopher Danielson
- Ten Black Dots by Donald Crews

**Centers**

- Counting and sorting activities
- Color recognition and sorting

**Sensory Materials**

- Loose Parts
- Musical Instruments
- Kinesthetic Movement
- Sensory Bin with Fillers
Resources

Organizations
Christina Tonderevold - Building Math Minds
Erikson Institute – Early Math Collaborative
Graham Fletcher

Articles
Mathematics in the Early Grades: Counting & Cardinality by Interactive STEM
Subitizing Games: Assessing Preschoolers’ Understanding of Number by Macdonald and Shumway

Books & Activities
How Many? by Christopher Danielson
Ten Black Dots by Donald Crews
Match Em All by Erikson Institute
Which One Doesn’t Belong by Christopher Danielson
Tiny Polka Dot
Roll and Circle by Counting With Kids
Questions?
Thank You

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