Teaching Counting:
Considerations for Instruction

Purpose and Overview of Guide

The purpose of this guide is to provide strategies and materials for developing and implementing lessons for students who need intensive instruction in the area of place value, numeracy, and counting. Resource room teachers, math interventionists, and others working with struggling students may find this guide helpful.

Within college- and career-ready standards, place value, numeracy, and counting are taught in Grades 1 and 2. This guide may be used as these concepts are introduced, or with students in higher grade levels who continue to struggle with the concepts.

The guide is divided into four sections:

1. Sequence of skills as defined by college- and career-ready standards
2. A list of important vocabulary and symbols
3. A brief explanation of the difficulties students may have with counting
4. Suggested activities and strategies for teaching counting concepts

Sequence of Skills—College- and Career-Ready Standards

(The grade level of a standard is represented by the number or letter in parentheses.)

Know number names and the count sequence.

- Count to 100 by ones and by tens. (K)
- Count forward beginning from a given number. (K)
- Write numbers from 0 to 20. (K)
- Represent a number of objects with a written numeral 0–20. (K)

Count to tell the number of objects.

- Understand the relationship between numbers and quantities. (K)

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- Connect counting to cardinality. (K)
- When counting objects, do the following:
  - Say the number names in the standard order. (K)
  - Pair each object with one and only one number name, and each number name with one and only one object. (K)
  - Understand that the last number name said tells the number of objects counted. (K)
  - Understand that the number of objects is the same regardless of their arrangement or the order in which they were counted. (K)
  - Understand that each successive number name refers to a quantity that is one larger. (K)
- Count to answer "How many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration. (K)
- Given a number from 1–20, count out that many objects. (K)

Compare numbers.

- Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group. (K)
- Compare two numbers between 1 and 10 presented as written numerals. (K)

Extend the counting sequence.

- Count to 120, starting at any number. (1)
- Read and write numerals (to 12), and represent a number of objects with a written numeral. (1)
- Count within 1,000. (2)
- Skip count by 5s, 10s, and 100s. (2)

Add and subtract within 20.

- Relate counting to addition and subtraction. (1)

Vocabulary and Symbols

The following terms are important for students to understand when working with counting.

Number: An object used to count. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	**Numeral:** A symbol used to describe a number. 3 57	**Counting:** Finding the amount of a set.
Cardinal number: The amount of a set. 1, 2, 3 objects: 3 is the cardinal number.	**Ordinal number:** A word that shows the order in a set. third fifty-seventh	**Even:** A number divided evenly by 2. 0, 2, 4, 6, 8, 10
Odd: A number not divided evenly by 2. 1, 3, 5, 7, 9	**Quantity:** The amount of a set.	**More:** A word describing a set that is larger.
Less: A word describing a set that is smaller.	**Equal:** Two sets have the same amount.	

Common Areas of Difficulty

- Counting principles
- Understanding of numbers and what numbers represent

Five Counting Principles

- **One-to-one correspondence.** When counting, students assign one (and only one) count to each object of a set. Partitioning and tagging helps with this skill.
  - **Partition.** Touch or move one object.
  - **Tag.** Assign a number to that one object.
- **Stable order.** The order in which students count is stable. In English, we start with 1 and count forward: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. The counting order never changes.
- **Cardinality.** When counting objects in a set, the last count represents the number of objects in the set. For example, if 5 objects are on the table, the student counts, "1, 2, 3, 4, 5." When asked how many objects, the student answers, "5."

- **Abstraction.** Counting can be used to count any collection of objects. It does not matter whether all the objects in the set are the same. "Objects" can also be claps, sounds, or imaginary objects.
- **Order-irrelevance.** The way objects are counted (e.g., left to right, top to bottom) does not matter when counting. The counting order does not change the cardinality of the set.

Conceptual Understanding

Manipulatives can be used to help practice counting skills. Some examples of counting manipulatives include Unifix cubes, clips, toy animals, chips, and candies.




Activities and Strategies Related to Specific Standards

Know number names and the count sequence.

- Teach and sing counting songs. A variety of songs are available on YouTube at http://www.youtube.com/.
  - Don't always stop counting at 10. Continue counting to 20.
  - When counting, show the written numbers that accompany the number word.
- Teach skip counting through chants or songs.
  - Practice counting with number lines or hundreds charts.

Hundreds Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- Give a number (e.g., 6) and count on.
  - *Start with 6 and count up to 15. Ready? 6, 7, 8, 9, 10, 11, 12, 13, 14, 15.*
- Present story problems that require counting on.
  - *Devin had 5 apples in his basket and then he picked some more. Let's start at 5 and count more apples.*
- Write numbers.
  - Practice motions of writing numbers in rice, pudding, glitter, sand, or dirt.
  - Teach appropriate pencil hold.
  - Practice writing numbers on paper.
  - Learn rhymes for writing numbers.

Number Writing Ryhmes

Number 1 is like a stick, a straight line down that's very quick.

For number 2 go right around, then make a line across the ground.

Go right around, what will it be? Go round again to make a 3.

Down and over and down some more, that's the way to make a 4.

Go down and around, then you stop, finish the 5 with a line on top.

Make a curve, then a loop, there are no tricks to making a 6.

Across the sky and down from heaven, that's the way to make a 7.

Make an "S" and then don't wait, go up again to make an 8.

Make a loop and then a line, that's the way to make a 9.

- Show a set of objects and write the number.

Count to tell the number of objects.

- Show a set of objects and count. Partition and tag items as they are counted. At the end of counting, say the total number of objects in the set.
- For example:

- *There are one* (touch the blue dino), *two* (touch the yellow dino), *three* (touch the lime green dino), *four* (touch the dark green dino), *five* (touch the orange dino). *There are five dinosaurs.*
- *I can count these in a different way. There are one* (touch the dark green dino), *two* (touch the yellow dino), *three* (touch the orange dino), *four* (touch the lime green dino), *five* (touch the blue dino). *There are still five dinosaurs.*

- Show a set of objects and answer the question, "How many?" For example:
  - Place nine chips in a line and ask, "How many?"

  - Place nine chips in a rectangle shape and ask, "How many?"

  - Place nine scattered chips and ask, "How many?"

- Say a number and show that many objects. For example:
  - *Show me 13 cubes.*

Compare numbers.

- Show two sets of objects and ask: "Which set has more?" "Which set has less?" "Are the sets the same or equal?"
- Show two written numerals and ask: "Which is more?" "Which is less?" "Are the numbers the same or equal?"
  - At first, choose numbers with a greater difference in magnitude (e.g., 2 and 9, 3 and 8).
  - Then, choose numbers closer in magnitude (e.g., 3 and 5, 7 and 8).
  - Once place value is introduced, choose numbers that are often confusing (e.g., 17 and 71, 23 and 32).
- Teach signs with the Greater Gator.

Extend the counting sequence.

- Teach counting to 120, starting at any number. Use number lines or hundreds charts.
- Teach counting to 1,000, starting at any number.
- Reinforce skip counting skills.
  - Flash one hand (i.e., five fingers) when counting by fives.
  - Flash two hands when counting by tens.

Add and subtract within 20.

- Start with a number and count on.
  - *Start with 4 and count up 2 more. Ready? 4, 5, 6. 4 plus 2 is 6.*
  - It may be helpful to teach showing the number counted on with fingers:
    - *Put the 4 in your head. Now, we count on 2. Ready? 5 (hold up 1 finger), 6 (hold up 2 fingers). 4 plus 2 is 6.*

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