Student Name: _____

Kindergarten Numeracy Development: Representing Numbers

Developmental aspects	Emerging With direct support…	Developing With guided support…	Applying With minimal support…	Extending
The Child	With direct support, and teacher modeling, may participate and may attempt to make sense of mathematical experiences.	With guided support, demonstrates a willingness to explore mathematical ideas while participating in problem solving experiences. Is beginning to show an awareness of numbers, space and time used in everyday life.	With minimal support, demonstrates interest in and a willingness to explore mathematical ideas while purposefully participating in problem solving experiences. Communicates an awareness of how numbers, space, and time are used in everyday life.	Shows interest and curiosity while purposefully exploring mathematical problem solving experiences. Perseveres. Makes and explains connections to numbers, space and time as used in everyday life.
Understanding Number				
Representing numbers	With direct support, may represent number (e.g. by copying the model).	With guided support, represents number (e.g., shows requested number of objects).	With minimal support, uses actions, materials, pictures, words to show how many.	Represents numbers confidently, and in a variety of ways. (e.g. words, pictures, symbols, materials…)
The Support/Scaffolding*	The Model: showing, instructing, explaining, directing, making explicit, demonstrating, giving examples	The Coach: structuring, sequencing, focusing, cueing, guiding, organizing, supporting	The Advisor: suggesting, reminding, prompting, monitoring, asking for elaboration	The Mentor: extending, stretching, wondering aloud, exploring, "what if-ing"
*a variety of supports (teachers, peers, environmental, etc.) can be provided at any stage of development				

Scenario: Each day, the teacher provides different materials for her students to build models for different numbers (represent numbers). Some students are working to understand the idea of representation, or to count with a consistent number chain, while others have moved on to representing quantities in different ways (e.g., showing 9 as 3 and 3 and 3, or 4 and 5). The teacher has also provided students with ten frames to organize their counters for easy recognition of groupings of 5.

Direct Support

Ariel takes a handful of cubes and starts to make a face with them. She needs <u>direct support</u> to understand that she can use the cubes to represent a specific quantity. The teacher *explicitly* shows how to put a cube out for each number in the counting sequence, up to the required number. Then she *explains* that Ariel is going to make a set to match the count. She *helps* Ariel to put down a cube for each number as they count together, using a rhythmic pattern. She *emphasizes* that the last number in the count shows the total number in the group.

Guided Support

Tyrone attempts to put out his cubes one by one, but the teacher notices that he has difficulty saying the number sequence correctly (i.e., 1, 2, 3, 4, 5…). He needs <u>guided support</u> to keep the number words in order, so the teacher helps him with *sequencing* by saying the numbers aloud with him as he counts his cubes.

Minimal Support

Carmen is able to count out the correct number of cubes, but then stops and waits for teacher direction. She needs <u>minimal support</u> to connect the cubes with the count. The teacher *prompts* her by asking her to explain what she did, moves the six cubes into two rows of three, and asks if it still shows six.

Without Support

Ranjit counts out his own cubes correctly <u>without support</u> to show 8 on his ten frame, and then moves them to show a different way to arrange the 8 cubes to show 4 and 4. Then he says, "There are lots of ways to show 8!"

Emphasizing mathematical concepts and relationships means devoting substantial time to the development of understandings. It also means relating this knowledge to the learning of skills by establishing relationships between the conceptual and procedural aspects of tasks. The time required to build an adequate conceptual base should cause educators to rethink when children are expected to demonstrate a mastery of complex skills.

Curriculum and Evaluation Standards for School Mathematics, 1989, p. 17