

Counting rationally to 15



**ASSIGN
BUSTER**

Grasping the Basic Concepts of Counting It is important for children to learn the basic concepts behind counting before they can do so effectively. David Geary (1999) in his article, Mathematical Disabilities: What we know and don't know, enumerates the basic rules as follows:

One to one correspondence. One and only one word tag (e. g., " one", " two") is assigned to each counted object. The teacher can gather manipulatives, like cups and blocks of wood, and make fun activities out of these. Learning is easier this way for students see what they are actually doing. Blocks of wood can be labeled 1 - 15. Cups can then be placed on top of these blocks. The rule of the game would be, one cup on top of each block.

To evaluate mastery on one to one correspondence, the teacher can post fifteen pictures on the board and indulge the students in yet another game. The teacher will then count the pictures on the board and the student that catches the teacher doing an erroneous counting gets an extra point. One such error by the teacher would be counting the same picture twice. Geary (1999) tells us that although children with MD understand one to one correspondence, they sometimes make mistakes on tasks that assess this concept. Children with mathematical disabilities(MD) almost always detect double counting when it is the last manipulative that is counted twice. When the first manipulative is double counted, the child has to wait until the counting is finished before he can decide whether the counting was erroneous or not. This suggests that children with MD have difficulty keeping information while counting. To solve this problem, have them use their fingers to count (Brown, Ferguson and Witzel, 2007). This helps them associate counting with their fingers (one finger for '1', two fingers for '2' and they may use sticks as substitutes for numbers '11' through '15'). They can

then keep track of the manipulatives as they count them.

Stable order. The order of the word tags must be invariant across counted sets. First graders may be taught the proper sequence of numbers, that is, "one, two, three, , fifteen", by constantly practicing with them. Teachers can involve parent participation in this activity to further the learning process at home.

Mathematical disability is also called dyscalculia. Children with dyscalculia have trouble reading numbers and picturing them in their mind (Steinbach (Writer) and Doughty (Reporter), 2008). The teacher may use a number line to help them understand the relationship between numbers (i. e. where '10' is located in the number line: that it comes after '9' and it precedes '11').

Cardinality. The value of the final word tag represents the quantity of items in the counted set. An activity like Connect the Dots is best for this basic concept. The students will have to connect the dots, following the correct number sequence, to be able to create a figure. After which, the teacher can ask them how many dots it took to complete the image. This activity can be repeated a number of times to allow the students more practice. A consistent correct answer from the students is an indication of their mastery of the cardinality rule. Geary (1999) says that students who don't understand cardinality will recount the dots.

Children with dyscalculia have difficulty keeping track of information as they count. They need more time to complete activities like Connect the Dots. Be patient with them.

Abstraction. Objects of any kind can be collected together and counted. The teacher can assign his students to collect data from their respective

neighborhoods on just about anything that can be grouped together and counted. Extra points will be given to those who can identify groups that are usually packed in numbers of fifteen (e. g. a local store that sells balloon bundles of fifteen). Students can gather data only if they have proper supervision.

Students with MD have unusually high anxiety when dealing with mathematics (Steinbach (Writer) and Doughty (Reporter), 2008). Have children with this disability work together. This way, they will feel they are not alone in their problem. They can learn at a pace both of them are comfortable with. The teacher may assist them when difficulties arise.

Order-irrelevance. Items within a given set can be tagged in any sequence, from left to right or right to left, or skipping around as long as one to one correspondence is observed. It would be easier for the students to grasp this thought if it were to be taught right after the one to one correspondence rule. The previous example on the said rule will be used to deepen their understanding on order-irrelevance. Note that the cups were placed each on top of the fifteen numbered blocks in the earlier example. Let your students see that interchanging cups between blocks while keeping the 1: 1 ratio still gives the correct number of cups.

Children with MD have difficulty in understanding the order-irrelevance principle the most (Geary, 1999). Their belief that only adjacent items can be counted suggests that they understand counting as a mechanical activity. Make counting part of their daily life. Count books on a shelf with them; guide them as you skip around some books. Familiarity with order-irrelevance allows them to understand the principle.

Use diagrams and manipulatives. Relate each numeral to the quantity it

represents. Practice naming and writing down numbers with your students. English language learners must recognize numbers before they can learn the basic counting concepts.

R e f e r e n c e

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