

# COUNTING PRINCIPLES

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Counting process is a skill that the children need to learn with the logic behind that activity. It is the basic step to understand about the number concepts and to know about the other related mathematical concepts built over the number concepts. The children with special needs have issues in understanding the mathematical operations directly, since the basic concepts are not explained logically in a way that they can understand.

The main process of counting a set of objects involves a lot of co ordination between 3 sensory processes, looking at the objects (visual), touching them and putting it aside ( tactile) as they keep calling the numbers (auditory). And the whole exercise should be presented as a meaningful activity with the understanding about the importance of counting and how it is directly related to the concept of quantity.

To understand the logical steps in teaching counting, one has to know about the principles of counting. Gelman and Gallistel (1978) have identifies 5 basic principles followed in the process of counting and in teaching this concept to the children.

## **Basic principles of counting:**

Principles about how to count?

- one to one correspondence
- stable-order principle
- cardinal principle

Principles about what to count?

- abstraction principle
- order irrelevance principle

## **Principles behind teaching counting in a logical sequence**

### **How to count principles**

#### **The one-to-one principle:**

This is one of the basic and primary principle followed at the elementary level of teaching counting to the children. This focuses on the importance of assigning only one counting tag to each and every object to be counted.

Firstly, before planning for the activity the child has to be trained physically in handling the group of objects that is the child should be able to touch the objects, pick them and move it to another side. If they cannot handle it on their own then with some physical assistance and support they should be able to move the objects as they call out each number.

Secondly, the child should be trained to do the tagging which is assigning distinct names one at a time. And they should be physically keeping track or mentally partitioning the objects that have already been counted and the left out objects separately.

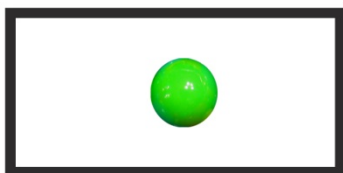
**For example:**

One can start the counting practice session starting with a set of 5 objects and then slowly increase it to 10 and progress up to 20. When a child is given a set of 5 objects to start with, he should start with calling out 1 and go up to 5 and keep going until all the objects have been numbered.

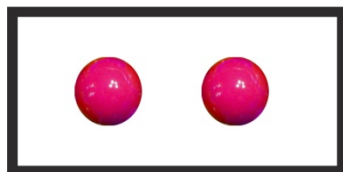
This activity by itself shows that the child has learnt to do the partitioning mentally in 2 categories that is the counted ones and to be counted ones separately. The instructor should also check that the child does not repeat saying the same numbers with the counted objects again and again. Hence the child needs to concentrate and pay attention to coordinating between tagging and partitioning the objects; and for this they use their own strategies like physically touching or pointing to the objects, putting the objects that they counted in a separate pile to physically see the partition.

It is also very important to emphasise the fact that the learning objective for counting the objects is mainly related to quantifying the set of objects and not related to anything about the features of the objects used.

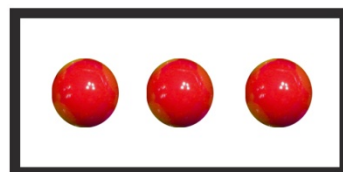
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## Strategies to teach the one to one principle:

In the elementary grades, the children may be vague or incorrect when they are asked to count, they just keep pointing at the objects randomly. They try to give more importance to verbalising the sequence of numbers without actually paying attention to the tagging, and consequently loose one to one correspondence.

Specific modes of teaching should make them more aware of the importance of coordinating the itemising and tagging. The following strategies can facilitate children to understanding the meaning of counting.

- Practising arm gestures and pointing at large objects, like big furniture, chairs, cupboard in the room, windows, doors etc.
- Controlling the clapping and counting the claps
- Using the index finger and physically touching the objects and counting
- Moving items to another pile or basket to keep track of the objects that have been counted.
- Placing counters or other tallies next to the objects being counted.
- Using number lines or tracks to place items as they are counted.
- Using special marks next to the objects that are counted.
- Developing eye pointing and nodding.
- Counting can be very easily included in different ways, while playing a number of games with the children.
- Using novel objects of interest to get the attention of the child and make counting a more enjoyable activity.
- Colour and contrast, wherever it is appropriate make sure that one uses objects that are distinctively in different attractive colours. And the colourful objects should be presented in a contrast background, to facilitate their perception issues.
- Sometimes using the familiar objects from their daily life like biscuits that they can count and eat, their favourite cereals or tiny sandwiches can also motivate their counting exercise. This will condition them to the counting activity and increase their interest in counting.
- Providing auditory prompts, physical prompts by assisting their hand movements towards the objects can also help them to learn the concept of counting.