HOLLYMOUNT SCHOOL EARLY NUMBER AND COUNTING POLICY

Hollymount School

Inspiring Success

The Black Pear Trust

Counting

Counting is the foundation of children's mathematics education. It is a key component in the EYFS and KS1 national curriculum and ultimately throughout all of mathematics. At Hollymount, we recognise counting is more than being able to recall numbers. Children need to gain a relational understanding of this fundamental mathematical concept in order to successfully develop as mathematicians.

The impact effective teaching of early counting has on children's proficiency in mental calculation is significant. Being able to 'count on' or 'count back' is the foundation for one more and one less, which leads on to addition and subtraction. Counting in 2s, 5s and 10s, and this process of repeated addition, introduces multiplication.

Children should demonstrate high levels of accuracy and fluency when counting. Rote learning will play a part in ensuring this can happen, however, such an approach should be incorporated within- rather than as a substitute for- teaching which prioritises providing children with a secure understanding of the different concepts within counting.

The 5 principles of counting, which are widely agreed and have long been established, are closely considered in our teaching and learning. They guide our assessment and ensure it is formative to make our teaching targeted and purposeful. Teachers model, question and choose activities to support children acquire a secure understanding of each of the different principles. The first three principles (one to one correspondence, stable-order, cardinal) are considered the 'how' of counting and the final two (abstraction, order-irrelevance) are considered the 'what' of counting. Teaching is often likely to address more than one counting principle at a time, however, the first three principles should be secured before attention moves on to the final two.

Number Sense

Number sense refers to recognising and understanding number and how numbers relate to each other. Developing number sense can begin from a very early age, building on a child's intuitive understanding of number. Strong number sense allows a child to develop more advanced strategies of counting and is one of the first opportunities for children to reason in a mathematical context and become 'flexible thinkers'.

Children should be given opportunity to subitise with numbers up to 4, and even higher with numbers displayed in particular patterns. Being able to subitise means children do not need to count small quantities, but instead recognise the amount simply by the way it is presented. Children should also explore the composition of numbers. For example, 5 is made up of a 3 and a 2. This idea of part-part whole can be combined with the ability to subitise so children become even more efficient. The language used by teachers and children should encourage making comparisons between different quantities, for example: more than, less than, greater than, fewer than, equal to, the same as.

Numerals

Opportunities to match quantities and words to the corresponding numeral can be facilitated throughout each of the counting principles. At an appropriate time, when fine motor skills allow, children should record numbers using the written numeral.

Concrete and Visual Representations

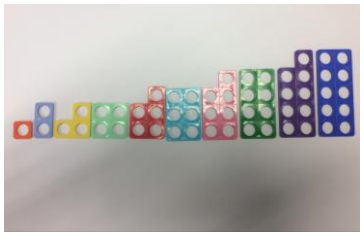
The use of concrete and visual representations support teachers and children with the explanation and assessment of different mathematical concepts. Furthermore, effective use of visual and concrete representatives within counting provide children with a greater opportunity to gain a relational understanding. A concrete representative is only a manipulative when the child handles it or, to a lesser degree, when it is used within modelling by the teacher. Photos, drawings or jottings of physical resources are therefore visual representations. We encourage a range of resources to be used so children do not associate number with a particular representation, but rather, gain a full appreciation of the abstractness of counting. Successfully combining the concrete, visual and abstract support children in making secure links and relationships between the three.

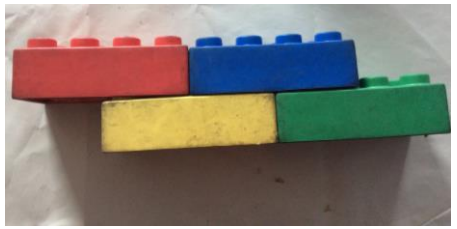
Here are examples of some of the resources children will work with during their learning; this is not an exhaustive list. To ensure our children become successful at counting our teaching is concerned with the modelling, explanation and activities the resources are used alongside rather than the resource itself.

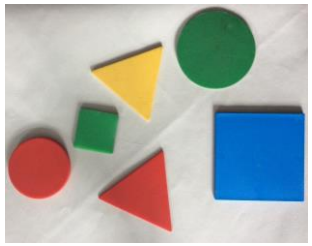


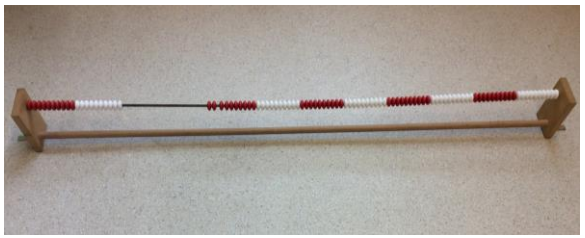






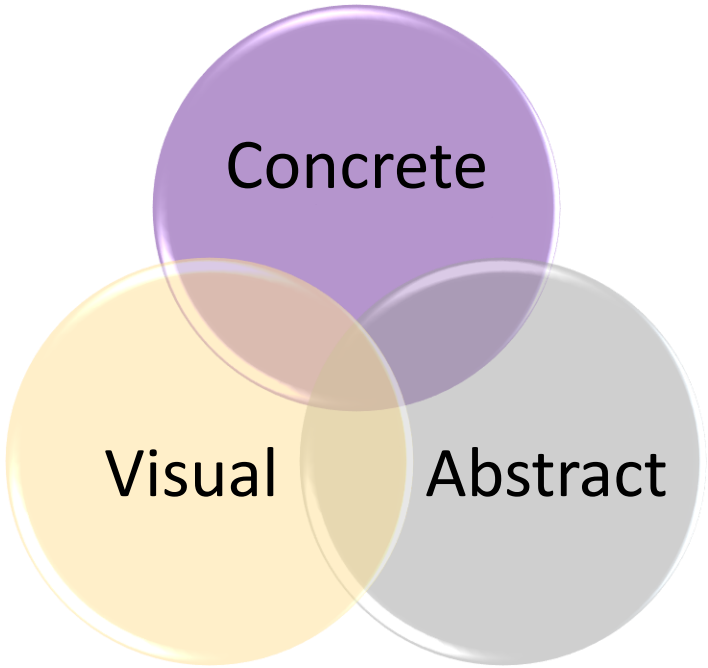





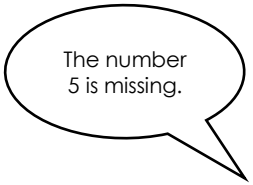



The Abstract

Delivered at the appropriate time in the child's counting development, the activities themselves will become increasingly abstract. These could include changes regarding what is counted (e.g. claps, imaginary objects, a mixture of large and small objects, objects of different colours) or the strategy used to count (e.g. right to left, starting with a particular coloured object first, counting in your head). As mentioned previously in this policy and is one of the underpinning philosophies in the teaching of mathematics at Hollymount School, switching between the concrete, visual and abstract should not be a linear nor a one-way process. Combining different strategies/resources simultaneously and revisiting the concrete and visual (particularly for discussion purposes) is imperative in providing all children with a depth of understanding.



The 5 Principles of Counting

Principles of Counting	**Teaching and Learning Strategies to Support Children's Understanding and Teacher Assessment** *(these are effective examples that can be employed in the classroom but are not an exclusive list)*
1. The one-one principle "This involves the assigning of one, and only one, distinct counting word to each of the items to be counted. To follow this principle, a child has to be able to partition and re- partition the collection of objects to be counted into two categories: those that have been allocated a number name and those that have not. If an item is not assigned a number name or is assigned more than one number name, the resulting count will be incorrect" (Thompson, 2009).	- Count a given set of objects   Other examples: - Find a given number of objects - Count each time the teacher throws a bean bag into the bucket - Have a child spot a mistake when the teacher counts an object twice
2. The stable-order principle "To be able to count also means knowing that the list of words used must be in a repeatable order. This principle calls for the use of a stable list that is at least as long as the number of items to be counted; if you only know the number names up to 'six', then you obviously are not able to count seven items. So, a child who counts 1, 2, 3 for one particular collection of three objects and 2, 1, 3 for a different collection cannot be said to have an understanding of the stable-order principle – although such a child would appear to have an understanding of the one-one principle. However, a child who repeatedly counts a three-item collection as 2, 1, 3 does appear to have grasped the stable-order principle – although, in this case, has not yet learned the conventional sequence of number names" (Thompson, 2009).	- Identify the missing number   Other examples: - Recite songs/nursery rhymes - Count on a number line - Spot the mistake when numbers incorrectly ordered
3. The cardinal principle "This principle says that, on condition that the one-one and stable-order principles have been followed, the number name allocated to the final object in a collection represents the number of items in that collection. To be considered to have grasped this principle, a child needs to appreciate that the final number name is different from the earlier ones in that it not only 'names' the final object, signalling the end of the count, but also tells you how many objects have been counted: it indicates what we call the numerosity of the collection. If a child recounts a collection when asked how many objects there are, then they have not yet grasped this principle" (Thompson, 2009).	- Count objects and state total number of objects   Other examples: - Count on from a group of objects when further objects are introduced - Cover the objects and question, "How many are there?" - Recognise one more/one less than a given set of object

4. The abstraction principle "This states that the preceding principles can be applied to any collection of objects, whether tangible or not. Obviously, for young children learning to count it is easier if the objects are tangible and, where possible, moveable, in order to help them to distinguish the 'already counted' from the 'yet to be counted' group. To understand this principle, children need to appreciate that they can count non-physical things such as sounds, imaginary objects or even the counting words – as is the case when 'counting on'" (Thompson, 2009).	- Count the number of sounds made by an instrument  <u>Other examples:</u> - Count a mixture of unrelated objects - Watch a clip of a rabbit hopping and question, "How many times does the rabbit hop?" - Count imaginary objects in your head -
5. The order-irrelevance principle "This principle refers to the knowledge that the order in which items are counted is irrelevant. It does not really matter whether the counting procedure is carried out from left to right, from right to left or from somewhere else, so long as every item in the collection is counted once and only once" (Thompson, 2009).	- Count mixed objects in a particular order e.g. red objects to be counted first  <u>Other examples:</u> - Count objects in different orders e.g. left-right/top to bottom/random - Have coins displayed on a table and question, "Would there be a different amount if I counted the coins in a different order?" - Count objects presented in different ways e.g. the same number of inter-locking cubes displayed in different shapes

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