

## Numicon Training Sessions - 19.6.18

Importance of children being able to see and feel will enable them to solve elaborate problems.

Effective teaching and learning in EYFS

- Playing and Learning - playing and having a go
- Active learning - Concentrate and keep on trying
- Creating and thinking critically - developing ideas and editing.

Numicon - Aim is to develop confident, competent mathematicians in all our pupils.

Communication and Language is affected by the changing society - parents and children using technology instead of communicating, not reading or playing maths games, as much as lives are so much busier.

Numicon helps children to discover patterns and make generalisations.

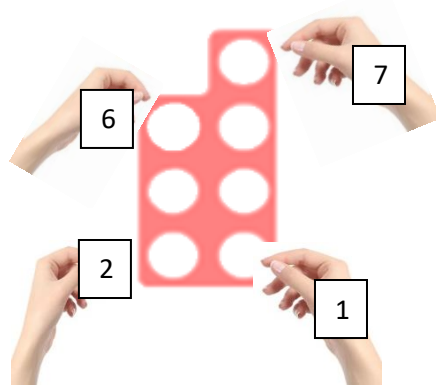
Are we all on the same page?

- Order and consistency of pattern
- Counting
- Not counting
- Problem Solving
- Reasoning
- Fluency
- Full Range of Resources
- Embedded in our environments

Numicon patterns -

Using numicon in a pattern gradually increasing allows pupils to see the order of numbers and visualise

Double handed counting - using both hands to count each dot on each side - alternating as you go, having an even number means you use both of your hands for the same amount of times if you have an odd number you use an extra hand. It also helps to outline the shapes.



You can also see the other numicon shapes and number representations within the original plate e.g. 5 & 2, 6 & 1, 3&4 , 3&3& 1, 3 & 2 & 2.

Using coloured pegs to make the numicon plate after double handed counting can also be used to help counting and understanding of the number representation. This can also help children to instantly recognise the plate as it's number value without having to count.

You can also get resources that are grey which can be used for different mathematical problem solving and pupils to develop understanding of what the number looks like instead of just the colour.

Subitizing - knowing what the amount looks like without counting e.g. like knowing a 5 is a 5 on a dice instantly.

Making Numicon shapes from egg boxes - Using these to develop knowledge of number, counting 1-1, visualising the numbers and the different patterns. They could also be painted in the colours of the numicon, or use coloured resources to fill with.

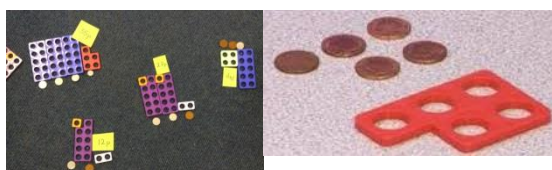
Wrapping paper activity - Using patterned wrapping paper as a background for pupils to count using pegs by putting a peg on each pattern. Folded paper can be used to differentiate the number patterns and pegs, they can then put the pegs into numicon shapes so they can then add or count the amounts.



Developing confidence with numbers, relationships of numbers, moving and making patterns, range of ways that they can be used.

### Subtraction

- Using pegs alongside the numicon plates so the children can physically take away the pegs.
- Placing other plates on top of the original number to work out how missing number subtraction.
- Using tin foil, playdough or hands to hide the amount that is being taken away.
- Printing subtraction covers to hide amounts-



Using numicon and coins to support understanding of the value of different coins and to do coin addition.

Using numicon in context and linking it where possible to real life situations.

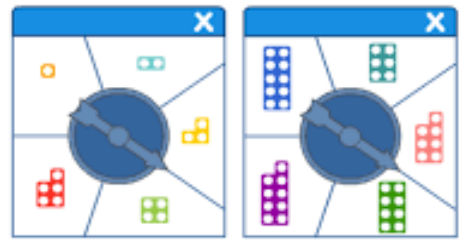
Using base boards - You can develop understanding of space, position and orientation of plates e.g. Can you fill the board using only 15 shapes? Can you only use certain plates? Can you fill the board with only odd/even pieces? Can you fill the board symmetrically?



What if - You had two boards together? You could only use



Playing games using colours or spinners, numbers and plates to see if you can fill the board just using the plate if it's your turn. Using the board and games like this can encourage and develop geometry, communication, shape, patterns, special awareness.



Constructing with meaning - Linking the shapes to numerals so they can make the relationship between amount and numeral.

Number Rods - Use alongside numicon

- Moving up one at a time is the same
- Numbers have their own colour - although these are different which allows them to give multiple values to each rod.
- The stairs pattern is the same
- Represents the number system.
- You can see the 'value' of the 1 by comparing it to the other rods. - You can complete challenges such as how many white ones to make the orange one? They can also explore the values of each of the rods and creating understanding that the same colour is the same value.
- 1-1 Counting elements are withdrawn the rods can have any value.
- Number sentences with colours, Red & Red = Orange
- The numicon rods and shapes also balance in weighing scales.
- Rods can be used to create pictures and patterns.
- Rods can help to develop fine motor skills.
- Rods can be used to develop measures as each white cube is 1cm. There are also number track rods can be used alongside for measuring various things.



## Environment -

- Using and creating the shapes in everyday practice and provision.
- Using numicon with playdough, cooking, sand, water - everywhere possible, linking alongside objects that are placed into the numicon pattern.
- Adults being partners in play, modelling and showing others what they go do.
- Hoops and numicon shapes scoring points.
- Large numicon shapes - hop scotch, throwing things through holes, squirting water inside them.
- Numicon display using faces of children in each numicon hole.
- Children standing in numicon patterns and using photos to create number tracks and washing line.
- Using lots of physical resources and using them in patterns, plate line ups and allowing pupils to think mathematically.
- Measuring of plants, construction models, estimating and timing laps or routes.
- Setting up resources in the pattern of numicon shapes.
- Having the resources being accessible
- Counting snacks and resources.
- Fine motor skills - using pegs and objects to count out or line up.
- Connecting understanding, knowing that a high 5 is 5 fingers/thumbs
- Number hunts - Hunting for different numbers, in different representations.
- Doubles - Finding the same plates/rods find something that is double this.
- Halving and symmetry using pegs and a line down the board.

Counting - Linking to stories and different representations, counting songs and rhymes, adding actions and movements.

Good book - 1 is a Snail 10 is a crab.

## Other maths ideas-

- Addition using number of letters in names - Who's names make the biggest number? Owen (4) + Ned (3) = 7.
- Developing understanding of the = being balance/same as/ making / equals. This can be done exploring scales and swapping amounts over.

- Labelling draws with numbers on, using these in order - can mix these up, can be used to help tidying up.
- Numbers of pencils or objects in each pot - Using numicon as a communicate in print but for mathematical reasons.
- Numicon software for the IWB and use on computers.

Other resources that can be used in addition to numicon and alongside numicon

- Grey Numicon Pieces - <https://global.oup.com/education/product/9780198487289/?region=uk>
- Useful websites - Oxford Owl <https://www.oxfordowl.co.uk/>
- 10 - 10lines - Using 10's in a row to support understanding of 100's, 10's patterns.
- Digitdogchallenges.com - Give challenges that can promote discussion and mathematical thinking to solve problems <https://digitdogchallenges.com/>

### **100 Ideas for using Numicon**

<http://www.fulbridgeacademy.co.uk/our-curriculum/curriculum/domain-information/maths/100-things-to-do-with-numicon>

### **Evening Session - Introduction to Numicon**

Numicon provides a range of ways to use resources and apparatus to develop mathematical thinking and visualise key concepts.

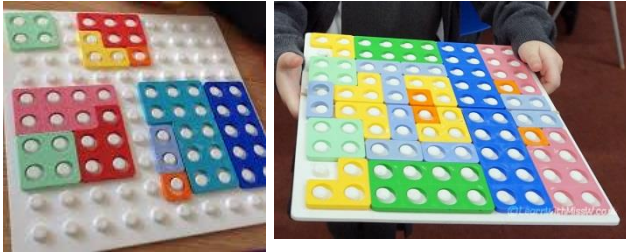
Numicon can support children with perseverance as there are lots of different ways they can solve a problem or achieve a goal.

Children are more likely to remember and retain information and actions if they have done an activity.

Some initial activity ideas -

- Pairs, matching
- Covering base boards, using overlay pictures or empty boards
- Feeling and exploring the shapes of them.
- Creating their own pictures using the shapes.

- Starting children using even shapes to complete the board.
- Filling the base boards using different criteria, such as just even numbers, odd numbers, just 8's, just blue ones.....
- Games using spinners (colours, numbers, shapes) to pick out and choose colours before placing on the boards or using them as a game, or use them as emptying or tidying.
- Using spinners the children can add plates together to be of equal value e.g. a pink plate would be 3 & 4.



#### Skills that can be developed

- Mathematical reasoning through discussions with adults as to patterns, why they don't all fit on boards.
- Understanding of multiplication - 10x10 and awareness of a 100 square
- Discussion of number bonds to 10 and building on this.
- Number recognition, connecting concrete experiences, pictures and language.

Children like patterns - they like patterns and building patterns. Patterns are all around the world, in our natural environment and in our world

Patterns - We want children to notice, copy, continue and generate patterns. It is important to develop these skills. Noticing patterns in environments and seeing numbers within this.

Ordering number plates - Knowing and looking at odd and even numbers, seeing the patterns and the steps up, this can be done by jumping up as you go.

Games to play - Make a pattern, close eyes then move a peg - Can your partner work out which one you have moved based on the pattern they originally saw.

Numicon helps to develop generalised understanding which can be developed through playing with playdough, printing with patterns and numicon plates.

Numicon lotto which you then can draw out a plate from a bag can they then find it on the sheet or bingo board?

Numicon plate colour collages.

Numicon game with Rods and Number plates - lay out the numbers and rods in order to 10, then partner closes eyes and has to work out which one has been taken away. Then play again but swap two plates or rods over so they are in different places.

Numeral Representation - Sometimes children will record a numeral this can often be the 'wrong' numeral - however its isn't always wrong, this may be the symbol or numeral representation they have associated with that amount.

Using different representations of any number can help children to understand its value, quantity and importance in the number system.

Daily events -

Register - Numicon number plates against self - registrations

Lunchtimes/Snack Times- How many children having each menu?

Sharing and tidying equipment - are they all there? Labels on trays, containers etc....

