Kesh Community Nursery

Early Mathematical Experiences and Awareness Policy

Reviewed in:

Ratified by the Board of Governors on:

Next Review in:

In Kesh Community Nursery we aim, through a facilitating environment, to encourage children to widen their knowledge and their confidence in mathematics through self- exploration and problem solving aided by skilful adult interventions.

'The goal of early childhood education should be to activate the child's own natural desire to learn.'
Maria Montessori

'Play is often talked about as if it were a relief from serious learning. But for children, play is serious learning. Play is really the work of childhood'
Fred Rogers

'Learning and teaching should not stand on opposite banks and just watch the river flow by; instead, they should embark together on a journey down the water. Through an active, reciprocal exchange teaching can strengthen learning how to learn.'
Loris Malaguzzi (Reggio Emilia Approach)

Curricular Guidance for Pre-School Education (2018) page 26 states:

'A positive attitude towards and an understanding of mathematical concepts are important in everyday life. These develop slowly in young children, so they need opportunities to revisit activities and to experience mathematical ideas in many different contexts.'

Aim:
To foster enthusiasm, confidence and the development of knowledge in exploring, using and applying a broad range of mathematical concepts using the indoor and outdoor learning areas and local environments to enhance learning experiences.

Objectives:
To provide all children with broad varied experiences in which mathematical language, skills and concepts can be created, supported and nurtured.

Operating Policy:
The children will have opportunities to observe peers and adults using and applying mathematical skills and concepts in everyday situations and in nursery based activities. Maths is not seen as a separate area but rather as part of the whole wider curriculum and potential for developing mathematical awareness is built into all aspects of nursery life.

The children will have the opportunity to explore the properties of a wide range of materials in a range of contexts which will include much free play experience with, and without, adult input and use their own experiences of real life situations such as shopping, cooking, sharing etc.

Confidence and enthusiasm will be supported through sensitive adult input which will provide for open ended questioning and the development of mathematical thinking and language.

Learning will be achieved through children's self-exploration and natural curiosity about the world around them as well as via a mixture of cross-curricular (throughout all the areas of learning) and topic based activities – ie activity based learning where appropriate. The curriculum will be delivered through playful learning and skilful staff interventions to expand upon each child's own interests and queries.

'Staff in the pre-school setting should seek to extend, <u>informally</u>, the mathematical experiences the children have already had in their home environment. This helps to lay the foundations for positive attitudes.' Pg 26 Pre–school Guidance

Mathematical development, including later numeracy skills, depends on becoming confident and competent in learning and using key skills. This area of learning includes counting, sorting, matching, seeking patterns and becoming aware of numbers, shapes and measures. Mathematical understanding will be developed through the use of stories, songs, games and imaginative play so that the children enjoy using and experimenting with numbers and mathematical terminology as part of their everyday play. Through play, alongside sensitive intervention and language input from adults, the child can gain knowledge of mathematical concepts and language in an incidental manner.

The children will need a wide range of opportunities to experience sorting, matching and comparing a wide variety of objects and materials in order that they may begin to count systematically and understand the true meaning of number. There are certain concepts which the child needs to understand, and in providing nursery activities we aim to provide the children with every possible practical experience to enable the development of this understanding. Staff and children will use natural and man-made materials around them in their indoor and outdoor environments to support and enhance learning.

We shall endeavour to enhance each child's learning through hearing mathematical language being used as a natural part of conversations with adults and thus help consolidate their understanding of the key terms and concepts – all the while taking into account the differing stages of development of each individual child and ensuring that each one's needs are met appropriately through reinforcement, consolidation or, where required, extension – these will be met through our targets in our Actions for Specific Children where required.

We are very much aware that each child is an individual and that not all children will grasp concepts and ideas at the same rate or level as their own mathematical experiences prior to entry of nursery may also vary widely. It is of the utmost importance that the child is allowed to explore, investigate and experience before being given more structured.

'When appropriate and through <u>naturally occurring opportunities</u>, children should be enabled to develop their understanding of the following areas.' Pre-school Guidance 201

Development of Early Number

'Children should have the opportunity to develop their natural curiosity about the role of numbers and counting in their everyday lives.'

- *Opportunities to match and count everyday items when at play e.g. adult finds one object and the child finds the matching one, the number of items they have made in playdough, number of bricks in their tower, matching one-to-one e.g. cup to saucer, teddy to child etc. before developing into more abstract opportunities through the use of board games and picture matching as the year progresses and each individual's skills develop.*
- *Matching apron to activity e.g. art apron, playdough apron, water apron, playroom tabard etc.*
- *Matching by size, shape, texture etc.*
- *Free sorting according to the child's own criteria/to criteria/criterion set by adult in more structured activities*
- *Cooking – sorting ingredients and equipment, things which melt/not, hot/cold etc.*
- *Water and sand play will involve a wide range of opportunities to count, sort and match through investigative play – adults will guide and extend language at every opportunity without interfering directly with the flow of play*
- *Construction toys can be sorted by colour, shape, size etc.*
- *Through use of small world play for example – explore the concepts of first/last*
- *Enjoyment and sharing of stories, rhymes and songs incorporating number – including action songs e.g. Five Little Speckled Frogs, The Hungry Caterpillar*
- *Opportunities to see numerals in everyday life/role play e.g. on car number plates, on microwave when cooking, on computer keyboards, on shop till/calculator, telephones, prices boards in café etc.*
- *Build on children's own knowledge of number to ensure accurate rote to 5 before attempting to ask them to count objects, build then on secure 1-1 correspondence skills*
- *Counting will be carried out at every possible opportunity by adults to model accurate counting for e.g. how many scoops of sand it takes to fill a bucket*
- *Number rhymes, counting games, dice games will be used to reinforce number understanding and make it fun*
- *Using numbers in practical contexts and within play – making logical deductions and making estimations*
- *Using the language of more than, less than e.g. in the comparison of two piles of cars/apples etc.*
- *Encouraging children to ask questions for themselves and through exploration discover the answer for themselves e.g. 'Who do you think is the tallest/smallest?'*
- *Play with money – buying items from role play shop/café/hairdressers/a ticket for the zoo etc.*

Development of Shape

'Children need to develop an appropriate language in order to describe objects. Adults should encourage them to examine and talk about objects that are a similar shape and observe and discuss objects which are different from each other.'

- *Free play with a wide variety of natural objects – shells, leaves, stones etc. with language input from the adults where appropriate*
- *Free play with man-made objects e.g. bricks*
- *Model making using boxes and junk art materials*
- *Describing and identifying shapes – first by sight and later by touch – words such as fat/thin, long/short, rough/smooth etc. – shape hunts for the key shapes i.e. circle, triangle, square and perhaps rectangle if it is deemed appropriate*
- *Recognition of similarities and differences e.g. will roll/stay flat on the table, straight edges*
- *Simple movement themes – long shapes e.g. snakes, short shapes e.g. a tiny seed, a big elephant etc.*
- *Play with jigsaws – looking for straight edges, examining picture cues e.g. colour/shape to match with other pieces – also working on the need to rotate some pieces*
- *2D pattern – printing, painting, paper cutting etc.*
- *Drawing around shapes*
- *Shapes in the environment – traffic signs, bricks, paving stones, foods, manhole covers, wheels on cars etc.*
- *Symmetry can be experienced at a very simple level by folding paper and printing/painting on only one side and then reprinting by folding over the other side – e.g. butterflies in spring topic*

Development of Space

'Children need an understanding of space in order to consider the relationships between objects. As they play indoors and outdoors, they will begin to develop a good sense of how close objects are to them. They will begin to understand that the position of some objects is fixed; for example, the tree does not move and therefore we have to walk around it. Through play, they will appreciate that other shapes and objects can be moved.'

- *Games/activities involving basic prepositions e.g. in/on/in front/behind, onto under, on top of, beside – begin with objects and then lead towards in relation to own body and their position e.g. go through the tunnel, over the bridge, under the table etc.*
- *Develop awareness of others personal space and safety i.e. not standing on other person's hand, walking around object/person rather than colliding, ride bicycle into a safe space i.e. looking where they are travelling to ensure safety of others (STAFF DO A LOT OF THIS THROUGH ROLE PLAY RE USE OF BIKES OUTSIDE AS PART OF SETTLING IN ACTIVITIES – adults act out not sharing bikes and how to overcome this with use of a timer, also the consequences of not looking where they are going i.e. resulting in someone being injured – we revisit this throughout the year in a variety of different ways as/if the need arises)*
- *encouraging children to explore limited spaces, for example how many children can fit into a large box and what happens if another child climbs in or one climbs out;*
- *Encouraging children to choose space to sit carefully at carpet time/find good space for music and movement time*

- *Children become aware of the good spaces needed at children's choice area on the floor in relation to small world play/games/construction*

*****THIS AREA MAY WELL HIGHLIGHT CHILDREN WHOSE GROSS MOTOR SKILLS ARE LESS WELL DEVELOPED IE BALANCE WHEN SITTING ETC – ADULTS WILL BE TAKING SPECIAL NOTE HERE AND DRAWING UP APPROPRIATE INDIVIDUAL TARGETS/HELP PROGRAMMES FOR THESE CHILDREN***

Development of Size and Quantity

'Initially, children describe objects in terms of big and small. The adult should share the appropriate language relating to length, weight, capacity or height.'

- *Looking at, and talking about, pictures which contain varying amounts of objects suing language of more/less/the same*
- *Playing with grading blocks, number pegs, cars, buckets etc. – discuss differing properties in relation to size: small, big and encourage use of comparatives and superlatives i.e. small, smaller, smallest etc.*
- *Through exploration, e.g. in water and sand play, develop understanding of capacity i.e. full, empty through comparison and experimentation*
- *Use building blocks to create towers for e.g. and then compare them to the heights of other objects including themselves – uses language of length and height i.e.: taller/shorter/ longer/smaller/more/less*
- *talking about characters in stories in terms of size, for example in Jack and the Beanstalk;*
- *helping children dress a teddy/doll by finding clothes that fit, then talking about clothes which are too big or small for the children;*

Development of Relationships

'The ability to make connections is important in many aspects of mathematics. An early appreciation and understanding of relationships can be developed in everyday routines and activities.'

- *Participation in tidy up times – i.e. matching where item came from and returning it to correct place e.g. book to story room or topic box, scissors to craft trolley, lids onto glue stick/pens etc.*
- *Following class rules 'If you take it out….you put it back when you are finished'*
- *Setting up role play areas e.g. set the table appropriately using picture cues, keep dustpan with brush in house corner, set up matching items for three bears in cottage matching chairs, bowls of porridge, spoons, beds, clothes etc. for each bear*
- *Games involving links between variety of objects i.e. those things that might go together (beyond matching) i.e. sock and shoe, knife and fork etc. and make simple statements to say why they should go together*
- *exploring the links in stories, for example The*
- *Three Little Pigs and Goldilocks and the Three Bears*
- *Talking about what is similar and different in everyday objects, for example selecting two children's coats that are a similar size and colour but are different in that only one has pockets.*

Development of Pattern

'Early understanding of pattern depends on children's ability to observe and talk about similarities and differences in objects. Music, stories and rhymes also contribute to pattern development.'

- *Looking for patterns in the environment e.g. brickwork, floor tiles, animal markings, leaves and flowers, footprints in the snow, webs, butterflies' wings, ladybirds' spots – children encouraged to record what they find through drawings, paintings, taking photos on nursery camera/iPad*
- *Making patterns in painting, printing and collage activities exploring different textures*
- *Making 3D patterns with bricks, pegs, tubular pasta, beads, stones, feathers etc. –through personal exploration leading to copying given patterns and then developing towards the creation of their own repeating patterns*
- *Staff helping children become familiar with language that describes the decoration of some paper and materials, for example spots, stripes or zigzags*
- *Using stories, rhymes, songs and musical instruments to encourage an awareness of sound patterns.*

Development of Sequencing and Time

'The concept of the passing of time is difficult for children to understand. However, there are activities that should help them begin to develop an awareness of time. These include daily and weekly routines such as home time and snack time, listening to sequenced stories, and talking about festivals or other special occasions, including 'how many sleeps until …''

- *Use of timers to help take turns and also show how time passes*
- *Discussion about how the day is divided into 'times' – playtime, snack time, tidy-up time, circle time, outdoor time, table top time, carpet time, story time, home time etc., using our visual timetable as a cue*
- *Following a simple music cue for tidy-up time or book-time*
- *Discussion how adults use clocks and watches to help them know what time it is and therefore what time according to the clock, we have snack/go outside etc.*
- *Free play with watches, clocks, timers etc. to help the child to recognise the role of number in time telling*
- *Discussion about days of the week, yesterday, tomorrow, last week, when you were small a long time ago, in two sleeps etc.*
- *Highlighting day and night in stories, for example that we go for a walk during the day and sleep at night*
- *Sequencing seasonal events or planting seeds and watching them grow*
- *Sequencing of events in own life/experiences e.g. pictures of them as baby, toddler and now – same with photos of adults*
- *Retelling their own stories/memories in sequential order*
- *Sequencing of stories/rhymes using pictorial aids/objects including retelling favourite rhymes or stories out of sequence for the children to correct;*
- *Following a pictorial 'recipe' e.g. for playdough/fake snow/jellibaff*

Planning, Recording and Assessment:

Key monthly targets are taken from our Long term planning. From these we take key weekly targets and then ultimately onto our daily planning – these may vary, according to skill and ability of the individual (see below for details).

Staff are able to observe the children informally and records of such observations are made on 'post-its' or through photographs/ videos or typed observations on Seesaw under the appropriate Area(s) of Learning. Any issues/concerns are added to our 'Actions for Specific Children' folder for our daily attention and help feed into our planning for each individual.
This means that assessment of each child is ongoing through mixture of informal observation, interactions with the child, the use of our Seesaw Journal and discussion during regular staff meetings. The information gathered is then used to inform our future planning for each child.
Information gained through recording and assessment will be shared with parents, other school staff and outside agencies as appropriate.

Signed _____ Chairman of Board of Governors

_____ Principal

Date: 5th April 2022

Involved in the consultation of the policy - All members of the teaching staff
Shared with staff – April 2022
Review Date – April 2025