Early Years Numeracy Rich Learning Environment Toolkit
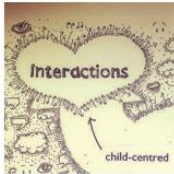
Numeracy Rich Environments

Children's numeracy and mathematical learning can thrive when surrounded by attuned adults and enabling environments that are rich and diverse in opportunities for developing understanding of number, numeral recognition, counting, sorting, patterning, measuring and problem solving. A numeracy rich environment emphasises the importance of using **interactions, experiences** and **spaces** effectively to facilitate high quality numeracy and mathematical opportunities.

Practitioners in high quality provision:
- *highly value and promote child-initiated experiences and provide spaces to capitalise on children's interests and motivation.*
- *tune in to child-initiated activity and sensitively intervene to extend children's inquiry, problem solving and thinking skills.*
- *extend learning based on an understanding of developmental stage and interests, rather than providing adult directed activities that have little meaning for children.*
- *enable children to lead their own learning, including planning projects and solving their own problems.*

Realising the Ambition (2020), p.83

Using the Toolkit
- This Numeracy Rich Environment Toolkit can be used to help you and/or your team evaluate the experiences, interactions and spaces within your establishment.
- Use your evaluation to plan for identified areas of development.
- This toolkit is not intended to be used in its entirety at the one time, rather to focus on one or more concepts of numeracy and mathematics. This may be linked to an improvement plan outcome or development need you have identified. For example, if you are focusing on developing counting skills, you may first use the *awareness of number* pages to identify where you are and how you know, then plan next steps or actions in order to improve the interactions, experiences and/or spaces for counting within your establishment.

Contents

Number – Interactions and Experiences

Number	Where are we now?	How do you know?	Where would you like to be? (Actions)
Interactions and Experiences			
Adults model counting for a purpose, e.g. counting children, equipment etc.			
Children have daily opportunities to count for a purpose, e.g. number of children at nursery, snack.			
Children have daily opportunities to listen to number rhymes and songs.			
Adults provide props to support number rhymes and songs.			
Children have regular opportunities to engage in ring games and action songs that contain mathematical language.			
Adults invite children to join in with tabletop games that are changed on a regular basis.			
Children are supported to create track games to support numeral recognition counting on etc.?			
Adults regularly model using dice and finger patterns to encourage subitising.			

Children are encouraged to use finger patterns for subitising? E.g. Grow, show, throw?			
Children are encouraged to engage with numbers in the environment. e.g. 'let's stand on number 4.'			
Children are supported to count in the abstract e.g. counting from a distance, counting actions, sounds etc			
Adults maximise incidental opportunities to support children's awareness of numbers and numerals.			
Adults share the planned learning intention using child friendly language. E.g. 'we are learning to count.'			

Number – Spaces

Number	Where are we now?	How do you know?	Where would you like to be? (Actions)
Spaces			
Numerals are displayed at children's eye level throughout the nursery.			
Number symbols (dot patterns, fingers etc) are displayed at children's eye level throughout the nursery.			

Numerals/number symbols are displayed at children's eye level in communal areas, e.g. cloakroom, toilets, lunch area.			
Children have access to a range of counting story books.			
Children have the opportunity to use 10 frames for a clear purpose, e.g. self-registration, snack time etc.			
Children have access to simple recipe cards for playdoh, paint mixing or baking. e.g. 2 cups of flour.			
Children have access to the following resources:			
- Variety of objects to count - 10/5 frames - Dice - Numerals - Dominoes - Mark making materials - Calculators			
Children have access to digital enhancements to support number, e.g. games on iPad.			

Money and Measure – Interactions and Experiences

Money and Measure (including Time and Pattern)	Where are we now?	How do you know?	Where would you like to be? (Actions)
Interactions and Experiences			
Adults model and encourage children to copy, continue and create a patterns both indoors and outdoors. (pattern)			
Children have the opportunity to explore and talk about pattern in the natural and built environment e.g., leaves, insects, bricks, tiles, fabric, wrapping paper. (pattern)			
Adults model the use of the language of pattern e.g. 'same', 'different', 'before', 'after', 'between' and 'repeated'. (pattern)			
Adults model and encourage children to talk about and discuss the patterns they have made e.g., colour, shape, size, quantity. (pattern)			
Children have opportunities to explore and talk about patterns created using line and marks, e.g. in the sand, with water, whilst painting, printing, drawing and mark marking. (pattern)			

Children have opportunities to explore patterns in sound and movement e.g. listening to and creating a repeated rhythm with instruments, creating a sequence of repeated movement to music. (pattern)			
Adults support children to explore and become aware of symmetrical patterns e.g. in the environment, using loose parts, mirrors, construction and block play. (pattern)			
Children have opportunities to engage with songs and rhymes that have repeats e.g. '5 Little Ducks'.			
Adults talk about patterns and routines of the day with children using visuals, where appropriate.			
Children are supported to order of the days of the week.			
Children have the opportunity to discuss months of the year and seasons.			
Adults model the use of sand timers, clocks and calendars.			

Adults model how to identify and use coins in real-life situations, e.g. a trip to the shop or role play in a café.			
Adults model the use of measuring equipment, e.g. balancing scales, rulers, non-standard units.			
Adults regularly lead baking experiences to promote measuring for a purpose.			
Adults maximise incidental opportunities to support children's awareness of money, time, pattern and measure.			
Adults share the learning intention using child-friendly language, e.g. 'we are learning the days of the week.'			

Money and Measure – Spaces

Money and Measure (including Time and Pattern)	Where are we now?	How do you know?	Where would you like to be? (Actions)
Spaces			
Children have access to a variety of threading resources to enable pattern exploration (repeated patterns AB AB AB/ABB ABB ABB/ABC ABC ABC) e.g. dyed pasta tubes, threading beads and shapes.			

Children have access to a variety of loose parts which can be used to explore pattern, symmetry and measure.			
Mirrors are available for use within play to explore symmetry by looking at self or placing objects in front of mirror.			
Photographs of structures built with blocks show examples of symmetry.			
A variety of fabrics, with different patterns and textures, are available in the role play area e.g. curtains, cushions, material for dressing up.			
Examples of different types of line patterns and marks are available for children to explore and copy e.g. straight, zig-zag, wavy, circle, cross, thick, thin.			
Children have access to construction materials such as block play to explore and investigate properties of shape and create and explore pattern in built structures.			
There are a range of books available that support children's engagement of pattern e.g., 'A Squash and a Squeeze', 'Rosie's Walk'.			

Children are able to interact with digital and analogue clocks that are displayed at their level.			
Children have access to books relating to money, measure, time and pattern.			
Children have access to a calendar.			
Children have access to realistic coins in real life and relevant contexts.			
Children have access to a wide range of measuring tools:			
-rulers -meter sticks /measuring tape (or non-standard equivalent) -ribbons/string -different sized containers -digital timers/clocks -sand timers			

Shape, Position and Movement– Interactions and Experiences

Shape, Position and Movement	Where are we now?	How do you know?	Where would you like to be? (Actions)
Interactions and Experiences			
Walks, shapes in environment.			
Adults share the learning intention using child friendly language. e.g. We are learning to describe shapes			

Shape, Position and Movement– Spaces

Shape, Position and Movement	Where are we now?	How do you know?	Where would you like to be? (Actions)
Spaces			
Children have access to large and small blocks and blocks of different shapes.			
Children have access to 2D and 3D objects both real and manufactured.			
Children have access to a variety of loose parts.			
Children have access to a range of stories relating to shape, position and movement.			
Children have access to mirrors.			

Data Handling – Interactions and Experiences

Data Handling	Where are we now?	How do you know?	Where would you like to be? (Actions)
Interactions and Experiences			
Adults regularly model how to match items according to colour, size or purpose.			
Adults support children to match items according to colour, size or purpose.			
Adults model how to display children's choices/information (e.g. snack, story, pet etc) in a concrete or pictorial format.			
Adults support children to interpret different charts, graphs and signs. (e.g. This story got the most votes so this will be our book of the week.)			
Adults share the learning intention using child friendly language. E.g. We are learning to collect and sort objects.			
Adults model using data handling activities for a real life purpose e.g. survey to find book of the week, nurseries favourite snack etc			
Adults ask questions related to information that has been collected e.g. what had the most/least votes? What was the most/least popular choice?			

Adults use surveys to support change in areas within the nursery e.g. a survey to find out what differences the children would like to see.			

Data Handling – Spaces

Data Handling	Where are we now?	How do you know?	Where would you like to be? (Actions)
Spaces			
Children are encouraged to sort and categorise various resources through clearly labelled spaces. (e.g. coloured pencils & glue sticks or plastic blocks & wooden blocks).			
Resources are clearly labelled for the children to organise equipment when tidying up.			
Resources are displayed in a way that encourages the children to match real life objects. E.g. as socks, shoes or cutlery, numerals and the dot pattern etc			
Children have access to a concrete or pictorial display of relevant data. (e.g. , favourite snack, mode of transport to Nursery etc)			