Mathematics Professional Development Programme Pilot

The Early Mathematics programme comprises of six online learning units and four seminars facilitated by the Stronger Practice Hub PDP early mathematics pilot lead. The units comprise of a range of interactive learning activities, such as information boxes, photos, videos, quizzes and downloadable resources. Each unit includes learning trajectories as well as indoor and outdoor learning examples for different stages of child development. Practitioners will have regular opportunities to check their understanding and to apply their learning by reflecting on their own practice. They will also be equipped with practical ideas, activities and picture book suggestions.

Unit 1: Counting

Early Years Practitioners will:

- Reflect upon how children learn to count
- Gain an understanding of the complexity of how children learn to count
- Learn how they can support children's early counting skills through their everyday practice

This unit focuses on verbal counting and object counting, the counting principles and developing number sense. Practitioners will discover the stages of learning to count and understand how to support this with developmentally appropriate activities. They will be reminded that counting can be enjoyable and useful and that the principles of counting require time and a range of experiences to develop. Practitioners will also gain an understanding of the common errors that may be observed in children's early counting as part of this unit. Practitioners will consider the familiar context and repetitive structure of well-known number rhymes and complete a self-evaluation intended to help them reflect on how they support children's learning and how this might be further developed in the future.

Unit 2: Cardinality

Early Years Practitioners will:

- Gain a clearer understanding of the two different ways that children find 'how many'
- Learn how to help children find 'how many' through games and everyday activities.

In this unit, practitioners will understand how young children develop their early mathematical thinking. Practitioners will explore how to incorporate cardinality in their everyday practice (including work with families), prior to listening to a podcast about the

development of mathematical thinking in pre-Reception children. Practitioners will gain an understanding about typical age and stage developments before completing a short self-evaluation activity designed to further their understanding. Following this, they will receive guidance on practical activities which will include spotting 'in the moment' opportunities in everyday routines as well as activities that could be set up as an adult-led activity to engage with children for a short time.

Unit 3: Measurement

Early Years Practitioners will:

- Consider the measures that young children typically learn about
- Think about practical activities which can support children's learning of measurement
- Be able to identify where everyday practice is supporting measurement learning
- Know which mathematical vocabulary can be used to support this

Practitioners will learn about early measurement concepts. They will explore how to support learning about length, weight, capacity and time with a range of activities and mathematical vocabulary. Practitioners will have the opportunity to consider typical stages of development in measurement and consider learning areas which are rich in opportunities for supporting key concepts. Practitioners will receive ideas for everyday practice, both as part of continuous provision and for supporting children in adult-initiated activities.

Unit 4: Pattern

Early Years practitioners will:

- Know the different types of patterns that young children engage with
- Learn about some key activities that can support children to engage in early patterning

This unit explores the three types of patterns that young children engage with in pictures, objects and actions: spatial patterns, repeating patterns and growing patterns. Practitioners will explore a range of opportunities for engaging children in early patterning, such as arranging loose objects, looking for patterns in the environment and through music and dance. In this unit, practitioners will learn that all patterns have a rule or structure which makes them predictable and how to support children to notice patterns that are all around them.

Unit 5: Shape

Early Years Practitioners will:

- Know the key stages of progression in shape learning
- Appreciate the variety of shapes that children need to encounter
- Gain some ideas on how to develop children's understanding of shape in their everyday practice

Practitioners will learn how children begin to compare shapes based on specific properties and how to encourage children to explore, experiment and play with a range of shapes. Practitioners will be provided with shape exploration ideas, such as construction and block play, as well as ways to bring a range of shape experiences into everyday practice. Practitioners will gain an understanding of the stages of development in shape learning as well as how to support progression through everyday activities to support adult and child-led play.

Unit 6: Space

Early Years Practitioners will:

- Learn about the important aspects of spatial awareness and exploration in early mathematics
- Reflect upon how they currently support children's spatial development in mathematics
- Consider how they might develop children's spatial development further in the future

In this unit, practitioners will learn how to help children to visualise, to recognise spatial relationships and explore the space around them. They will understand how to develop children's spatial thinking and explore how to introduce and reinforce understanding of position and direction. Practitioners will consider child development in spatial reasoning and the role of the supporting adult in this. They will reflect on the different opportunities offered both indoors and outdoors for children to engage in imaginative play on a large and small scale. Practitioners will receive practical ideas for learning in their settings and consider spatial concepts which children use to think and move spatially.

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