

Counting on Stories: How Picture Books Can Boost Maths Skills

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Picture books can be a powerful tool in supporting mathematical learning in several ways, as they blend narrative with visual elements to engage young learners. Picture books can introduce children to a variety of different concepts and can be used throughout children's early years to introduce and deepen understanding. They are also a strong asset to provide frequent and varied opportunities to build and apply mathematical understanding and to aid children in developing a positive attitude and interest in maths which is highlighted in the Educational Programmes section (pages 9-11) of the EYES Statutory Framework.

Educational Programmes are "high level curriculum summaries which set out what should be taught in settings for each area. They must involve activities and experiences that enable children to learn and develop, as set out under each of the areas of learning." - EYFS Statutory Framework.

The curriculum summary for maths is, "Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes." - EYFS Statutory Framework.



There are many ways that picture books can be used effectively to develop and secure Mathematical understanding:

1. Introducing Mathematical Concepts

Picture books often incorporate basic mathematical concepts such as counting, shapes, patterns, size, addition, subtraction and comparisons within their stories. Books like 'One Fish Two Fish Red Fish Blue Fish' by Dr. Seuss or 'Ten Black Dots' by Donald Crews can introduce numbers, counting, and sequences in a fun, accessible way.

2. Building Number Sense

Stories that focus on counting, addition, subtraction, or even division can help build foundational maths skills. For example, 'The Very Hungry Caterpillar' by Eric Carle provides opportunities to explore counting, one more and addition in an engaging way.

3. Visualising Mathematical Ideas

Illustrations provide a visual representation of mathematical concepts, making them easier for young children to see patterns, make connections and begin to understand. For example, books that illustrate patterns or symmetry, like 'Hooray for Fish' by Lucy Cousins, allow children to see patterns in many different ways.

4. Encouraging Problem Solving

Picture books often pose open-ended questions that encourage children to think critically and creatively. This can help them develop problem-solving skills and explore different approaches to solving a problem.

5. Incorporating Mathematical Vocabulary

Picture books can introduce and reinforce maths-specific vocabulary. By reading books that use mathematical language such as "greater than," "equal," "more," or "less," children can start to understand and use the vocabulary necessary to discuss mathematical ideas.

6. Collaborative Learning

Reading picture books can be a shared experience that promotes discussions and collaboration among children. This can help them learn from each other, share their ideas, and develop their understanding of mathematical concepts.

7. Fostering a Positive Attitude Toward Maths

Engaging stories can help build a positive association with maths. Picture books that emphasise fun, curiosity, and discovery help children feel more confident and curious about mathematical exploration.



The <u>Education Endowment Foundation</u> (EEF) is a UK-based organisation focused on improving educational outcomes for students, particularly in disadvantaged communities. The <u>Early Mathematics Evidence Store</u> includes evidence-informed approaches and practices to support mathematics in the Early Years. All of these approaches can be supported by the use of carefully selected picture books.

Approaches and practices to supporting early mathematics							
Early Mathematics Overview	w 1. Teaching the Associ between Number and	ation q Quantity 2. Promoting Fluency wi Numbers and Sequen	th ces 3. Teaching Problem-S Skills for Maths	Solving 4. Teaching a to make Cc	nd Modelling how mparisons and s	acilitating mathematical nguage	
Early Years Evidence Store Supporting Early Ma Early Years	athematics in the		Effaction Endownent Foundation				
Effective approaches to suppo	ort What is it?	Evidence summary of the approach	But the approach into action				
03 Teaching Problem Solving Skills for N	This approach involves teaching and modelling matta problem solving skill, including showing how to use the solution of the	There is enforce that this approach can here a positive region of the second second second second second second region of the second second second second second second information is a second second second second second behavior tasks down and powering period behavior tasks down and period task and the second behavior tasks down and the second second second behavior tasks down and the second second second behavior tasks down and the second second second behavior tasks and the second second second second behavior tasks and the second second second second monotonic and assects and the second second second second monotonic and assects the second s	Neuroing History alout History alout Revening Insuring a more of strategies Support fring Early Mathem	matics in the			Education
04 Teaching and Make Comparison Make Comparison	This approach involves providing opportunities for children to make connections, by discussing what is the same, similar or different and identifying units of repeat in patterns, it may involve maken	recensary for some children. There is underscen that this approach can have a positive impact on different anying maintain. Research has not yet pispotaned which practices are most influential. If does not access the effect of state, location and position odd or even of them as of can also be effective. Activities involving block building and weighing acakes must also be effective.	Early Years Evidence consistently shows educators can that effective early numericy approaches ca Using multiple approaches together could al To support effective maths teaching, educat approaches and practices summised below	Years rec consistently shows educators can implement approaches that benefit children's mathematical akilis and knowledge. The EEP's Early Years Tookit estimates effective any numerics pagenaches can on average, provide sevem months akilid eard progress. gmptice approaches for mathematical devices. upport effective mathematical existence and existence mathematical akilis and knowledge. The EEP's Early Years Tookit estimates prover effective early tacked to know how hiddenin mathematical existence.			
	and measuring jugs.	Scaffolding, matching learning to children's levels of development and breaking down learning into manageable steps can be helpful when targeting and tailoring support to children.	Effective approaches to support Early Mathematics	What is it?	Evidence summary of the ap	pproach Put the approa	ch into action
95 Facilitating Aphrenatical Language	This approach involves intersiciously using specific informal and off formal modelling is use in concert, giving understanding of concepts and prompting children to use mathematical language.	The endersor that that apposite that a here a positive impacts on higher and where the apposite that use the term and the mark apposite that use the term and the mark apposite that the apposite the apposite that the apposite the apposite the apposite that the apposite the apposi	01 Tracking the Association between Number and Quantity	This approach involves teaching the child to understand sumbars and quantities. This could include using objects and pictures to visualize quantity, modeling counting sets, well as recogniting very small amounts without counting (subitising).	The approach has a positive impact on child outcome. Where the research hasn't yet proported with most influential, it does includes to upportery subtitising, exploring how numbers are mad- muther and heighing children'ts pair can a thread output to the subtitising exploring the thread data where the subtitising exploring thready datawhays, number lines, objects of the page output to the subtitising exploring to match di- tegets can be beneficial particularly for child accords particular.	Kiteria matha sich practices are childere to ander soci ander soci professional professional fafflech dem fron lover-	quantity
	<u> </u>		02 Promoting Fluency with Numbers and Sequences	This approach involves using daily robusts and roomsets day opport the day, such a singler, recognition and repetition, to permote Runcy with recogniting numerals and saying the court sequence.	There is evidence that this approach can be impact on children's mathematic and alon maths approaches. While the research hard's proposed of most informatical index index apporting the second second second second second Children can practice using Caffech and nur games, for example. If providing the approach equally to all child monitoring and associated wild be respect enclosed as associated wild be respect measured for one children.	en e positive galad offen sich pactores ave dirådem a sol ar eeffesten sol ar eeffesten dirådem ave sol ar eeffesten dirådem ave sol ar eeffesten hanneg ave takeling are control dir novolog take	recal sumerals

You can download the above evidence summaries by clicking here.

In conclusion, picture books offer a rich, interactive way to support and boost mathematical learning by bringing concepts to life for young learners. They help to foster an enjoyable learning experience that children can relate to both in and out of the classroom.



My Top Ten Picture Books to Boost Maths Skills

Here are my top ten picture books that can be used to support mathematics learning for young children...

	Book:		Main maths concepts:	Why the book is great:
1	One Fish Two Fish Red Fish Blue Fish by Dr. Seuss	DNE FISH TWO FISH RED FISH BLUE FISH	Counting, numbers and simple addition	This book uses rhymes and illustrations to engage children with numbers and counting, helping them practice early number recognition and simple addition.
2	The Very Hungry Caterpillar by Eric Carle	THE VERY CHEMARY De Cal-	Counting, days of the week, patterns, one more	Through the story of a caterpillar eating various foods, children can practice counting and learn about patterns and sequences, such as days of the week.
3	Hooray for Fish by Lucy Cousins	Hooray for Fish!	Colour, shape and patterns	This book features a variety of fish with different colors, shapes, and patterns on their scales. This naturally introduces the idea of repeating patterns. For example, one fish might have a pattern of red, blue, red, blue on its scales.
4	Ten Black Dots by Donald Crews	Ten Black Dots Donald Crews	Counting, number recognition, basic addition	This book introduces counting through a series of objects made from ten black dots. It helps children understand the idea of number composition and basic addition.
5	Pete the Cat and His Four Groovy Buttons by Eric Litwin	Petetethe Cat	Subtraction, counting	As Pete the Cat loses his buttons, children can count and subtract to see how many buttons he has left, reinforcing basic subtraction skills and number recognition.



6	The Snail and the Whale by Julia Donaldson	The Snail and the Shale	Measurement, distance	This story of an adventurous snail and a whale can introduce concepts of distance, size, and measurement in an engaging, story-based way. The whale's journey around the world also offers opportunities to discuss scales of measurement.
7	You Can't Take an Elephant on the Bus by Patricia Cleveland-Peck	Var Can't take an Elephant on the Bus on the Bus on the Bus	Size, spatial awareness, problem solving	This funny story introduces the concept of size and space, making it ideal for teaching children about relative size, measurements, and how objects fit in various spaces.
8	One to Ten and Back Again by Nick Sharratt and Sue Heap	One to Ten and Back Again Nick Sharratt Sue Heap	Counting, one more/less	This story gives children very clear pictures to count, and helps children make links between counting up and counting down.
9	Bears Love Squares by Caryl Hart	BEARS LOVE SQUARES	Shape	The book introduces a variety of shapes and encourages children to look for shapes in their own world, making learning interactive and engaging.
10	One is a Snail, Ten is a Crab by April and Jeff Sayre	Ard Palary Sayner Ald Sayner & Bandy Ceel	Counting, simple addition	This counting book introduces children to the concept of counting by feet. The book starts with a snail, which has one foot, and progresses through a variety of animals, each with a different number of feet.