

# Leaders of Early Learning 'Early Years Play with Technology'



Gemma Macdonald  
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# Aims

To become familiar with key policy and guidance in the context of digital learning

To understand how to implement digital literacy and computing science thorough the use of coding devices

To recognise the links across curricular areas when using coding devices

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# All learners All Achieving



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## GRAND CHALLENGE

How will technology and digital learning support our learners in fundamentally new ways?

The Council's ambitious plans to affect further transformational change in digital infrastructure have included modernising digital education provision:

**Empowered Learning.** Education Services remain committed to creating unique digital solutions for all learners, further transforming learning and teaching in all of our city's schools and early years settings.

Our practitioners are a highly valued and skilled workforce. Education Services holds an ambitious and deep commitment to the highest quality of career long professional growth for all practitioners focused on digital skills. Investing in our people to support depth of knowledge and understanding of **Glasgow's Pedagogy** and professional practice is the building block of consistent learning and teaching, higher levels of achievement and better progress.

Our imperative is to prepare young people to thrive in a digital future. Digital learning is being woven through Glasgow's Pedagogy, bringing a host of benefits to children, young people, families and practitioners and is based on clear and direct ambitions: to raise attainment among pupils; support equity and inclusion; strengthen future employability prospects; and developing the young workforce.

Across Education Services our thinking and behaviours have shifted in important ways in recent years. Long term shifts in the ways we structure our lives and create places for people are evident. Global economic challenges are impacting on decisions and thinking around sustainable investments and our digital strategy, for a future which will be very different. Our re-shaped lives are increasingly online with remote modes of being. Remote learning models have resulted in emerging online learning and teaching practices.

The use of future learning analytics using e.g. Artificial Intelligence in classrooms, augmented reality, digital instructional models and the importance of cyber security are aspects of focus as we reframe Education's Connected Learning Strategy 2.0.

These new ways of working and digital tools mean we all require to focus on improved, sustained and consistent levels of engagement, equipping learners with the critical skills that enable them to be highly productive, valued, adaptive and agile employees in a fast-changing world.

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*"The question is no longer **whether** technology should have a place in the playroom, but **how** technology can effectively be integrated."*

**Sir Kevan Collins**

Kevan is a member of the Cognita Board. He was Chief Executive of the Education Endowment Foundation (EEF) from 2011 to 2019



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# Education Endowment Foundation(EEF)



## USING DIGITAL TECHNOLOGY TO IMPROVE LEARNING

Summary of recommendations

1



Consider how technology will improve teaching and learning before introducing it

- New technology can often appear exciting. However, it can become a solution in search of a problem unless it is introduced in response to an identified need. It is often useful to link the introduction of new technology to wider planning, for example, a review of assessment policy.
- Schools should consider the pedagogical rationale for how technology will improve learning. The principles of how to use technology successfully are not distinct from questions of how to teach effectively or how children learn.
- Without a clear plan for support and implementation, technology is much less likely to have an impact. This includes considering what initial training will be needed, what time and resources are required, and what ongoing support should be available.
- Decisions about whether to introduce technology should also include an analysis of the costs of implementing the technology, alongside the expected benefits. This should include both the upfront costs and any ongoing requirements.

2



Technology can be used to improve the quality of explanations and modelling

- Technology has the potential to help teachers explain and model new concepts and ideas. However, how explanations and models are conveyed is less important than their clarity, relevance and accessibility to pupils.
- Introducing a new form of technology will not automatically change the way teachers teach. The introduction of interactive whiteboards provides an example that highlights the need to consider the pedagogical rationale for adopting a form of technology, and for carefully planning the training required to enable teachers to use it effectively.
- Technology can help teachers model in new ways and provide opportunities to highlight how experts think as well as what they do, but may be most effective when used as a supplement rather than a substitute for other forms of modelling.

3



Technology offers ways to improve the impact of pupil practice

- Technology has the potential to increase the quality and quantity of practice that pupils undertake, both inside and outside of the classroom.
- Technology can be engaging and motivating for pupils. However, the relationship between technology, motivation and achievement is complex. Monitoring how technology is being used, including by checking that all learners have the skills they need to use it effectively, is likely to reduce the risk that technology becomes a tool that widens the gap between successful learners and their peers.
- Some forms of technology can also enable teachers to adapt practice effectively, for example by increasing the challenge of questions as pupils succeed or by providing new contexts in which students are required to apply new skills.
- Using technology to support retrieval practice and self-quizzing can increase retention of key ideas and knowledge.

4



Technology can play a role in improving assessment and feedback

- Technology has the potential to improve assessment and feedback, which are crucial elements of effective teaching. However, how teachers use information from assessments, and how pupils act on feedback, matter more than the way in which it is collected and delivered.
- Using technology can increase the accuracy of assessment, and the speed with which assessment information is collected, with the potential to inform teachers' decision-making and reduce workload.
- Technology can be used to provide feedback directly to pupils via programmes or interventions, but in all cases careful implementation and monitoring are necessary. Feedback via technology is likely to be most beneficial if it supplements, but is aligned to, other forms of feedback.



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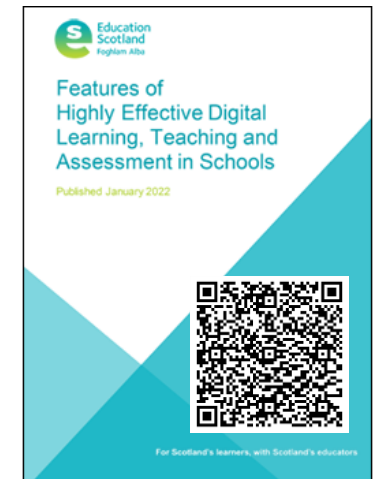
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# Key documents



curriculum for excellence



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# Bee-Bots



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# Bee-Bot Learning Opportunity

## Story Sequencing

1. Choose a story (story of the moment).
2. Read the story - focussing on key events and the order in which they take place.
3. Share the story sequence cards with the children.
4. Place the story sequence cards on the floor in a random order.
5. Programme the Bee-Bot to travel to each card in the correct order according to the story.
6. Encourage the children to use directional language throughout the activity.



# Core Experiences and Outcomes

## Literacy

I enjoy exploring and playing with the patterns and sounds of language and can use what I learn. **LIT 0-01a/LIT 0-11a /LIT 0-20a**

I enjoy exploring and choosing stories and other texts to watch, read or listen to, and can share my likes and dislikes. **LIT 0-01b/LIT 0-11b**

I enjoy exploring events and characters in stories and other texts, sharing my thoughts in different ways. **LIT 0-01c**

As I listen and talk in different situations, I am learning to take turns and am developing my awareness of when to talk and when to listen. **LIT 0-02a / ENG 0-03a**

To help me understand stories and other texts, I ask questions and link what I am learning with what I already know. **LIT 0-07a/LIT 0-16a/ENG 0-17a**

I enjoy exploring events and characters in stories and other texts and I use what I learn to invent my own, sharing these with others in imaginative ways. **LIT 0-09b/LIT 0-31a**

I use signs, books or other texts to find useful or interesting information and I use this to plan, make choices or learn new things. **LIT 0-14a**



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# Early Level Tracker 1



## Listening and Talking

<b>Enjoyment &amp; Choice</b>  <a href="#">LIT 0-01a /</a> <a href="#">LIT 0-11a /</a> <a href="#">LIT 0-20a</a> <a href="#">LIT 0-01c</a> <a href="#">LIT 0-01b /</a> <a href="#">LIT 0-11b</a>	Become aware that there are different types of text. e.g. those that can be read, watched or listened to	With support start to select texts that can be explored for enjoyment	With support be encouraged to share text preferences with others e.g. favourite stories/film and give simple reasons for preference.		Develop vocabulary through listening to and exploring different text forms		Will take opportunities to select appropriate texts within collaborative play contexts	Enjoy exploring the rhythm of language when listening to stories read aloud and other texts they watch or listen to	
	Begin to interact with predictable patterned text through repetition of rhyme and refrain etc.	Interact with songs, rhymes and stories and recite some well-known songs/rhymes from memory	Begins to engage with and respond to texts using means of their choice e.g. role play, puppets, mark making	Enjoy exploring and identifying rhyming words and with support, begin to create a string of rhyming words (can be nonsense rhymes)	Can hear and segment and identify the number of syllables in familiar words	Begin to keep a steady beat when exploring familiar stories, rhymes and songs	Begin to recognise and generate words with the same initial sound starting with own name and friends names		
<b>Tools for listening and talking</b>  <a href="#">LIT 0-02a /</a> <a href="#">ENG 0-03a</a>	Begin to listen to others with attention and give a response based on what has been said	Listens to and responds appropriately to others in a range of situations using body language appropriate to age and stage e.g. eye contact		Begin to hold a conversation with one or more persons on a theme of their own choosing, staying on theme for a short time	Begin to take turns when listening and talking in a variety of contexts	Begin to develop confidence in asking questions based on what they have heard		Begin to respond appropriately to some questions about what they have said and heard	Can follow a two part instructions and can give a simple instruction to others e.g. when – mixing paint, baking and ask questions to clarify
<b>Finding and Using Information</b>  <a href="#">LIT 0-04a</a>	Begin to listen/watch with concentration to find useful information e.g. to learn form a visitor about their occupation	Talk about information that has been interesting to them and/or new information	Begin to ask and answer questions to demonstrate recall of key information	Describe and share ideas/thoughts using what has been learned from listening to/watching texts.		With support begin to make connections between information learned and their own experiences to expand on a topic or theme		Begin with support to use new vocabulary when talking about information they have learned	Use what they have learned in order to make simple choices
<b>UAE</b>  <a href="#">LIT 0-07a /</a> <a href="#">LIT 0-16a /</a> <a href="#">ENG 0-17a</a>	With support can draw on prior knowledge and experiences to make connections and talk about a range of texts		With support begin to make predictions based on prior knowledge and experiences e.g. repetition in storylines		Can understand and ask ‘what’, ‘where’ and ‘who’ questions to clarify meaning			With support can discuss and answer some questions to demonstrate understanding of what they have heard	
<b>Creating Texts</b>  <a href="#">LIT 0-09a</a> <a href="#">LIT 0-09b /</a> <a href="#">LIT 0-31a</a> <a href="#">LIT 0-10a</a>	Begin to speak in well-formed short sentences to relay information and use some detail to give opinions, describe feelings, needs and events/experiences	Begin to use sequential language (first, next, now etc.) to describe or recount experiences	Speak clearly most of the time and begin to develop grammatical accuracy e.g. using correct verb/tense	Through modelling develop the use of a range of vocabulary including nouns, verbs, adverbs, adjectives, prepositions and pronouns during play and in different areas of the curriculum	Explore own and familiar stories through play and role play	Begin to ascribe meaning to what has been created e.g. drawings and models and discuss/answer questions with support		Use new vocabulary to which they have had repetitive exposure to	



# Early Level Tracker 2

<b>Enjoyment &amp; Choice</b> <a href="#">LIT 0-01a</a> / <a href="#">LIT 0-11a</a> / <a href="#">LIT 0-20a</a> <a href="#">LIT 0-01c</a> <a href="#">LIT 0-01b</a> / <a href="#">LIT 0-11b</a>	Become increasingly aware that there are different types of texts e.g. those that can be read, watched or listened to		With support, start to select texts that can be explored for enjoyment		Be encouraged to share text preferences with others, e.g. likes and dislikes, favourite story/film and give simple reasons for preference		Continue to develop vocabulary through listening to and exploring different text forms		Be guided to select appropriate texts within collaborative and play contexts		Enjoy exploring the rhythm of language when listening to stories read aloud and other texts they watch or listen to	
	Interact with predictable, patterned texts through repetition of rhyme, refrain etc.	Interact confidently with songs, rhymes and stories and recite some well-known songs/rhymes from memory	Engage with and respond to texts using means of their choice, e.g. role play	Enjoy exploring, identifying and generating rhyme	Listen to, distinguish and identify syllables in familiar one to three syllable words	Keep a steady beat with increasing confidence when exploring familiar songs and rhymes	Recognise and generate words with the same initial sounds and identify sounds within words					
<b>Tools for listening and talking</b> <a href="#">LIT 0-02a</a> / <a href="#">ENG 0-03a</a>	Listen to others with increasing attention and give some relevant feedback on what has been said	Demonstrate some use of appropriate body language when listening in a range of situations e.g. eye contact	Hold a conversation with one or more persons and stay on theme for increasing amounts of time	Be encouraged to take turns when listening and talking in a variety of contexts	Develop confidence in asking appropriate questions at appropriate times based on what others have said	Respond appropriately to different questions about what they have said with increasing confidence	Follow two or more part instructions and give simple instructions to others  With support, talk about experiences, ideas and information to increasingly wide audience					
<b>Finding and Using Information</b> <a href="#">LIT 0-04a</a>	Listen to/watch texts with increasing concentration and with an outcome in mind, e.g. to learn from a visitor about their occupation	Identify verbally information that has been particularly interesting to them and/or information that is new	With support, ask and answer questions to demonstrate recall of key information	Use what has been learned through listening/watching to verbally describe, explain, group or compare things with support		With support, relate information learned to their own experiences in order to expand on a topic or theme	Begin with support to use subject specific vocabulary when talking about information they have heard	Use what they have listened to in order to make simple choices				
<b>UAE</b> <a href="#">LIT 0-07a</a> / <a href="#">LIT 0-16a</a> / <a href="#">ENG 0-17a</a>	With support, make links with prior knowledge and experience to enhance understanding of a range of texts		With support, make predictions based on prior knowledge and experience, e.g. patterns in texts, subject matter		With support, ask an increasing range of questions with the purpose of clarifying meaning		With support, answer an increasing range of questions to demonstrate understanding of what has been heard		Begin to develop opinions based on what they have listened to/watched			
<b>Creating Texts</b> <a href="#">LIT 0-09a</a> <a href="#">LIT 0-09b</a> / <a href="#">LIT 0-31a</a> <a href="#">LIT 0-10a</a>	Speak in sentences to relay information and use increasing detail to give opinions, describe feelings, needs and events/experiences	Understand and use sequential language with support e.g. before, after, next, yesterday, tomorrow to recount or describe	Speak clearly almost all of the time and develop grammatical accuracy, e.g. using correct verb/tense	Develop the use of a range of parts of speech including nouns, verbs, pronouns adjectives, adverbs and prepositions during play and in different areas of the curriculum.	Explore own and familiar stories through play and use story maps, illustrations or props to share own and familiar stories	Be able to ascribe meaning to what has been created and discuss/answer questions with support		Develop an increasing range of vocabulary through what they see, watch or listen to and use different strategies with support to learn new words				

# Early Level Tracker 1



## Reading

<b>Enjoyment &amp; Choice</b>  <a href="#">LIT 0-01a</a> <a href="#">LIT 0-11a</a> <a href="#">LIT 0-20a</a> <a href="#">LIT 0-01b</a>	Become increasingly aware that there are different types of texts e.g. stories, non fiction	With support, start to select texts that can be explored for enjoyment		With support, discuss a story through illustrations and share likes and dislikes	Begin to develop vocabulary through listening to and exploring different text forms	Be supported to select appropriate texts within collaborative and play contexts	Enjoy exploring and reciting nursery rhymes, songs or chants	Generate a short string of rhyming words (can be nonsense rhymes)
	Enjoy exploring, identifying and generating rhyme using familiar words e.g. own name	Enjoy exploring the rhythm of language and listening to stories read aloud by reading role model	Interact with predictable, patterned texts through repetition of rhyme, refrain and identify deliberate mistakes	Begin to keep a steady beat along with familiar songs and rhymes	Begin to develop confidence to clap out syllables in own name and familiar 1-3 syllable words		Begin to develop confidence with book handling skills e.g. holding book correctly	Begin to become aware that print conveys meaning
<b>Tools for Reading</b>  <a href="#">ENG 0-12a</a> <a href="#">LIT 0-13a</a> <a href="#">LIT 0-21a</a>	Can recognise own name and some other familiar words as appropriate		With support can aurally identify most familiar initial sounds starting with own name and friends' names		With support begin to generate some words with same initial sound		Begin to recognise the difference between a letter and a word	
	Begin to use knowledge of sounds, patterns and word shapes to recognise some words and some sounds within words				Begin to use context clues such as illustrations to support understanding of stories.		Begin to be aware of some basic punctuation when sharing a story	
<b>Understanding Analysing and Evaluating</b>  <a href="#">LIT 0-07a</a> <a href="#">ENG 0-17a</a> <a href="#">LIT 0-16a</a> <a href="#">LIT 0-19a</a>	Explore and discuss features such as title, author, blurb, illustrator and pictures			Discuss the basic differences between fiction and non fiction and begin to develop understanding		With support, use what is known already about subject and text type to help understanding	Ask and answer simple open ended questions about events and ideas in a text	
	Use knowledge of familiar patterns and answer questions to help predict what will happen next		Shares thoughts and feeling about stories and other texts during and after reading		Contribute to discussion about events, characters and ideas relevant to the text and begin to make some links with own experiences and other texts		Retell familiar stories in different way e.g. role play, puppets and drawings	
<b>Finding &amp; Using Information</b>  <a href="#">LIT 0-14a</a>	Identify some familiar print from environment	Begin to show an awareness of features of fiction and non fiction texts when choosing texts for a particular purpose		With support, find information in a text to learn new things		Begin to answer simple open ended questions about what has been explicitly stated in specific sections of non-fiction texts	Retell some key events from a familiar story	

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# Early Level Tracker 2



## Reading

<b>Enjoyment &amp; Choice</b>  <a href="#">LIT 0-01a</a> <a href="#">LIT 0-11a</a> <a href="#">LIT 0-20a</a> <a href="#">LIT 0-01b</a>	Become increasingly aware that there are different types of texts e.g. stories, non fiction	With support, start to select texts that can be explored for enjoyment	Be encouraged to share text preferences with others, e.g. likes and dislikes, favourite story and give simple reasons for preference	Begin to develop vocabulary through listening to and exploring different text forms	Be guided to select appropriate texts within collaborative and play contexts	Enjoy exploring, identifying and generating rhyme
	Clap out syllables in own name and in familiar one to three syllable words	Enjoy exploring the rhythm of language found in texts and listening to stories read aloud by reading role model	Interact with predictable, patterned texts through repetition of rhyme, refrain etc	Begin to develop confidence with book handling skills e.g. holding book correctly, print directionality and mimic reading habits	Become increasingly aware that print conveys meaning	
<b>Tools for Reading</b>  <a href="#">ENG 0-12a</a> <a href="#">LIT 0-13a</a> <a href="#">LIT 0-21a</a>	Recognise and generate words with the same initial sounds and identify sounds within words	Develop increasing knowledge of grapheme phoneme correspondence/sounds . Use knowledge to blend to decode all through the word with support.		Become aware of the terms 'consonant' and 'vowel' and may use in play activities		
Phonics	Develop awareness of reversibility when blending and segmenting	Recognise the difference between letters, letter names, sounds, words and sentences	With support, build a bank of sight vocabulary, paying attention to phonemes		Begin to use context to support meaning, understanding and comprehension	
Sight vocab and context clues	Recognise that a sentence is something that makes sense on its own	Recognise basic punctuation and explore effects when reading aloud	Begin to explore how add description	Begin to explore the use of simple conjunctions in sentences	With guidance, put together knowledge of tools for reading to read with increasing confidence	Start to self-correct with support
Punctuation & Grammar						
<b>Understanding Analysing and Evaluating</b>  <a href="#">LIT 0-07a</a> <a href="#">ENG 0-17a</a> <a href="#">LIT 0-16a</a> <a href="#">LIT 0-19a</a>	Build confidence in selecting and using Reading Tools to help make sense of a text	Explore and identify features such as title, author, blurb, illustrator and pictures	Begin to understand the basic differences between fiction and non fiction	With support, use what is known already about subject and text type to help understanding	Ask questions to find out more and to help when not sure what something means	
	Use knowledge of familiar patterns and texts to find out or predict what will happen next	Communicate likes and dislikes during and after reading	Begin to discuss character, setting and story from fiction texts and begin to make links with own experiences	Answer simple open ended questions after reading to demonstrate comprehension	Complete simple close reading tasks with support to demonstrate comprehension	
<b>Finding &amp; Using Information</b>  <a href="#">LIT 0-14a</a>	Identify some familiar print from environment and use phonemic and word recognition strategies to explore less familiar print	With support, recognise some simple features of fiction texts, e.g. illustrations, chapters, rhymes	With support, recognise some simple features of non fiction texts, e.g. index, photographs	Begin to answer simple open ended questions about what has been explicitly stated in specific sections of non-fiction texts	Begin recognise that sometimes information is presented in alphabetical order and how this can help us find information	With directed support, find simple information from non fiction texts
	Begin to use simple graphic organisers to organise basic information	Use what has been learned from non-fiction and fiction texts during play and collaborative contexts	Begin to answer simple open ended questions about what has been explicitly stated in specific sections of fiction texts	Retell some of what has been found out in a story, e.g. with a story map that has been created by others	With support, create a story map to retell a story	

# Core Experiences and Outcomes

## Technologies

I understand that sequences of instructions are used to control computing technology.

**TCH 0-14a**

I can experiment with and identify uses of a range of computing technology in the world around me.

**TCH 0-14b**

I can develop a sequence of instructions and run them using programmable devices or equivalent.

**TCH 0-15a**

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# Early Level Tracker

Digital Literacy	<a href="#">Using digital products and services in a variety of contexts to achieve a purposeful outcome</a>	Recognises different types of digital technology	Uses digital technologies in a responsible way with appropriate care	Identifies different applications and programs by icon	Logs on to devices with a password/ passcode	Opens and closes a pre-saved file	Identifies and consistently uses the close icon
	<a href="#">Searching, processing and managing information responsibly</a>	Identifies and uses images and key words when searching for specific information		Demonstrates an understanding of how information can be found on a website (text, audio, images, video)		Understands they should not use materials that belong to others without permission	
	<a href="#">Cyber resilience and internet safety</a>	Demonstrates understanding of appropriate behaviour and language in the digital environment	Some awareness of what to do and who to ask for help if something inappropriate happens while using a device		Identifies where passwords and passcodes are used in school and at home		Understands the importance of having passwords and passcodes
Computing Science	<a href="#">Understanding the world through computational thinking</a>	Classifies objects, and groups using simple categories	Identifies similarities and differences between objects	Begins to identify patterns (objects and information)		Identifies beginning and end of an everyday process and recognises there are steps in between	Can give a set of instructions or directions in correct sequence
	<a href="#">Understanding and analysing computing technology</a>	Understands that computers follow a process and need precise instructions	Follows a simple set of instructions using visual representation (e.g. arrows)	Understands that devices can be controlled and respond to commands	Predicts what a device (or person) will do when given a simple set of instructions	Follows and designs simple algorithms for a programmable device (or person) to carry out a task (e.g. directions to a goal)	Identifies computing devices and everyday technology in the world around them and the impact it has on their daily life
	<a href="#">Designing, building and testing computing solutions</a>	Uses directional language (e.g. forwards, backwards, turn)		Identifies and corrects errors in a simple set of instructions or algorithm			Uses key language of computational thinking

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# Core Experiences and Outcomes

## Numeracy and Mathematics

I am aware of how routines and events in my world link with times and seasons, and have explored ways to record and display these using clocks, calendars and other methods. **MNU 0-10a**

In movement, games, and using technology I can use simple directions and describe positions. **MTH 0-17a**



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# Other Experiences and Outcomes

## Sciences

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do when they work. **SCN 0-04a**

Through everyday experiences and play with a variety of toys and other objects, I can recognise simple types of forces and describe their effects. **SCN 0-07a**

## Expressive Arts

Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**

## RME

As I play and learn, I am developing my understanding of what is fair and unfair and the importance of caring for, sharing and cooperating with others. **RME 0-02a**



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# Other Experiences and Outcomes

## Health and Wellbeing

In everyday activity and play, I explore and make choices to develop my learning and interests. I am encouraged to use and share my experiences. **HWB 0-19a**

I am aware of my own and others' needs and feelings especially when taking turns and sharing resources. I recognise the need to follow rules. **HWB 0-23a**

## Social Studies

I make decisions and take responsibility in my everyday experiences and play, showing consideration for others. **SOC 0-17a**



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## When I am a toddler...

- Give me opportunities to mirror and listen to adults and other children using gestures, sound and visual cues. This encourages me to participate in and explore language.
- Encourage me to explore, distinguish and react to sounds in the environment with you.
- Play with language - encouraging me to have fun investigating and experimenting with words, rhymes, songs and musical instruments.
- Enrich and extend my verbal and non-verbal interactions using familiar and unfamiliar language and vocabulary.
- Provide opportunities for role-play which combine familiar and new environments, routines and objects to deepen my language experience.
- Continue to share quality picture books with me (including both pictures and text) connecting with my interests and family life, encouraging reciprocal story-telling between you and me.
- Help me connect with stories on a personal and imaginative level, developing an understanding that text conveys meaning.
- Give me sensory and tactile experiences which encourage me to babble, talk and have fun with books.
- Incorporate a wide range of interesting resources which encourage me to communicate ideas through mark making, painting and drawing.
- Provide me with lots of opportunities to develop my gross and fine motor skills.

## When I am a young child...

- Provide different opportunities for me to express my thoughts, feelings and opinions, and consider those of others, with adults and my peers in one to one situations and in small groups
- Encourage me to notice patterns, similarities and differences in sounds and words.
- Play with language - encouraging me to have fun investigating and experimenting with words, rhymes, songs and musical instruments, drawing attention to familiar words, phrases and names in my environment.
- Continue to enrich and extend my verbal and non-verbal interactions using familiar and unfamiliar language and vocabulary, relating to my home and life experiences.
- Extend role-play - building on my life experiences and interests encouraging interactions, conversations and new vocabulary.
- Continue to provide me with quality picture books alongside a range of different media, fiction and non-fiction texts, connecting with my interests and family life, encouraging reciprocal story-telling between me and you.
- Encourage enjoyment, engagement and meaning of stories and explore the connections between text and illustrations.
- Continue to give sensory and tactile experiences by providing resources which support talking about stories and factual texts and having fun with books.
- Encourage me to notice the purpose of writing in all environments and to enjoy communicating my ideas through the written word.
- Provide me with lots of opportunities to develop my gross and fine motor skills.



# Promoting my confidence, creativity and curiosity - some key aspects of what I need from my learning environment



## Experiences

From birth  through my early years of childhood

In all experiences notice and encourage my schematic play - through the process of my repeated actions I am learning about my world and how things work.

- Consider my senses. Provide me with a range of experiences I can see, touch, hear, smell and taste. Talk to me about the sensations I experience and notice how I am responding.
  - Encourage my freedom of movement to kick, bounce, roll around and explore with my body.
  - Take me outdoors to experience the wonder of nature, for example seeing how things move in the breeze and feeling the sensation of the wind in my face.
  - Allow me to get messy and explore and investigate different textures such as painting with my fingers or squelching mud through my toes.
  - Provide me with objects and toys that stack, roll and rattle that I can grasp, hold, drop and move.
  - Enable my participation in musical experiences by swaying, clapping, bouncing and singing.
  - Provide treasure baskets, bags and boxes filled with sensory, real and natural materials to touch and explore.
- Help me understand how things work, for example, how objects can be moved transported around; how similar things can be grouped together, how things balance.
  - Provide me with open-ended resources I enjoy such as bags boxes and containers to put smaller items in, to move, to empty out, to scatter about.
  - Give me lots of opportunities to mix and combine messy materials.  
  
Provide me with materials to make clear marks with a variety of tools and equipment, such as crayons, chalks, pencils and paints with different sizes of brush. Provide a selection of paper, neatly arranged to help me see what's available and make choices for myself. Value my efforts through how you talk about, display or help me share my creations with my family.
  - Give me experience of everyday activities, splashing in puddles, being blown by the wind, digging holes, making collection of stones or natural objects, or items that I feel are special to me.
  - See the potential for wonder and promoting my confidence and independence through everyday routine experiences such as getting ready to go outside or during mealtimes. See what I can already do for myself and give me time to develop these skills.
- Help me recall how I have solved a problem in the past and how this learning links to my current challenge.
  - Give me time to find out similarities and differences in different problem solving experiences.
  - Create a wealth of interesting situations for me both outdoors and in. Carefully consider the possibilities of the objects available to me each day. How do they provoke my interest and extend my thoughts and learning?
  - Incorporate different technologies to enhance my learning experience.
  - Afford me daily opportunity to learn from nature and living things both outdoors and in.
  - Let me experience how materials change by heating, dissolving, freezing, mixing, etc.
  - Provide opportunities to find out how artists, dancers and musicians express their ideas and encourage me to try out my own expressions and interpretations.
  - Give me opportunities to learn about music through encouraging me to explore tunes, rhymes, rhythms, timing, pattern.

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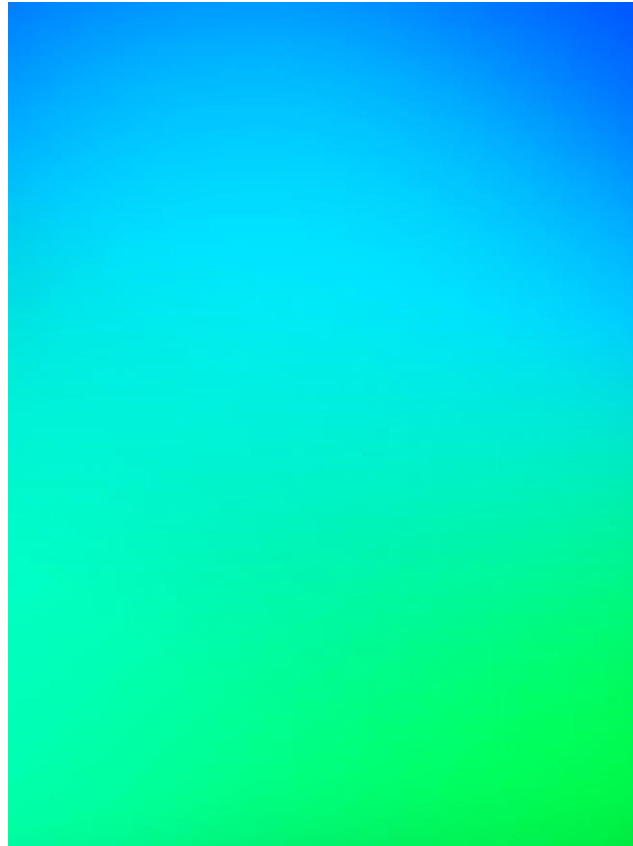
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Leaders of Early Learning



# Bee-bot story sequencing



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# Sphero indi



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# indi Learning Opportunity

1. Roll a dice.
2. Create a sequence with the amount of steps that matches the dice e.g. 4 dots = 4 cards.
3. Place the cards out and put corresponding numeral beside cards to show order.
4. As the indi moves encourage the children to say direction the indi is moving in e.g. “second the indi is moving **right**.”
5. Continue to repeat.



indi

# indi video



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# Core Experiences and Outcomes

## Numeracy and Mathematics

I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me.

**MNU 0-01a**

I have explored numbers, understanding that they represent quantities and I can use them to count, create sequences and describe order.

**MNU 0-02a**

In movement, games, and using technology I can use simple directions and describe positions.

**MTH 0-17a**

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# Early Level Tracker 1

<u>Estimation &amp; Rounding</u>		Knows they can check estimates by counting within 0-10		Can apply subitising skills to estimate the number of items in a set		Uses the language of estimation, including more than, less than, fewer than and the same		
Awareness of Number – Counting, Quantities & Number Structure	<u>No. word sequences</u>	Say short forward and backward number word sequences within 0-10		Uses ordinal numbers in real life contexts e.g. I am first/second/third in the line'		Recalls the number sequence forwards and backwards within 0-10		
	<u>Numerals</u>	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between		
	<u>Subitising</u>	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6		Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6		Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6		
	<u>Counting</u>	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)	
	<u>Place Value</u>	Explains that zero means there is none of a particular quantity				Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2		
<u>Addition and Subtraction</u>		Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10
<u>Multiplication and Division</u>		Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10				Begin to identify halves and doubles using concrete materials within 0-10		
<u>Fractions, Decimals and %</u>		Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'		Splits a whole into smaller parts and explains that equal parts are the same size		Understands that a whole can be shared equally and unequally		



# Early Level Tracker 2

Estimating and rounding	Checks estimates by counting						Demonstrates skills of estimation in the context of number including more than, less than and the same					
No. word sequences	Say short forward number word sequences (to at least 30)	Say short backward number word sequences (to at least 20)	Say alternate numbers (to at least 30)	Say next number word forward (to at least 30)	Say next number word backward (from 20)	Say number word after (within 20)	Say number word before (to at least 20)					
Numerals	Recognise numerals (from 0 to at least 20)		Identify (name) numerals (to at least 20)		Sequence numerals forwards and backwards (to at least 20)		Identify number before and after (to at least 20)	Identify missing numbers in a sequence (to at least 20)				
Subitising	Represent a number using fingers (throw)		Count objects in a group - regular & irregular arrangements (to at least 10)			Identify numbers in a group without counting – Subitise (to at least 10)						
Counting	Use 1 to 1 correspondence (to at least 20)	Count objects in a row (at least 20)	Count objects in a group/irregular arrangement (to at least 20)	Count objects using an array (to at least 20)	Count objects actions & sounds (without touching)	Use and understand ordinal numbers	Skip counts in 2s (to at least 20)	Skip counts in 5s (to at least 20)				
Place Value	Partition numbers visually to at least 10 (2 or more sets)			Identify number bonds to 10				Recognise zero as a place holder				
Addition And subtraction	Find one more and one less than a given number of objects	Combine 2 or more quantities to find the total	Count on when adding to a group	Count on or back in 1's when finding the difference	Recognise and read + - and = symbols	Read an addition / subtraction number sentence	Solve an addition / subtraction number sentence	Translate a word problem into a number sentence	Combine two quantities to find the total	Partition numbers into part, part, whole to 10	Use part-part-whole relationships to find linked number sentences	Solve missing number problems
Multiplication and Division	Solve division problems by sharing equally (to at least 20)	Solve division problems by grouping (to at least 20)	Identify odd and even (to at least 20)	Find the total of equal groups	Find the total of equal groups using repeated addition	Place objects into arrays	Find matching groups (to a total of 20)	Double quantities of objects (to at least 10)	Count patterns of 2	Double numbers mentally to a total of at least 10	Solve problems involving doubles (to at least double 10)	
Fractions, decimals and %	Recognise half of an object (as 1 of 2 equal parts)	Recognise quarter of an object (as 1 of 4 equal parts)	Identify half of a shape (object)	Identify quarter of a shape (object)	Identify half of a quantity	Identify quarter of a quantity	Find a quarter by halving a half	Place fractions on a number line				



# Early Level Tracker 1

	Money	Handles money and recognises a few coins up to the value of £2 through play and in real life and relevant contexts (using real and plastic money)			Identifies (names) 1p, 2p, 5p and 10p coins and pays the exact value for items to 10p e.g. if the price is 5p; can use a 5p coin to pay for it				
	Time	Links daily routines and personal events to time sequences and begins to use appropriate language including before, after, later, earlier	Recognises and where appropriate engages with everyday devices used to measure or display time e.g. clocks, calendars, sand timers and visual timetables		Identifies (names) the days of the week in sequence	Recognises the months of the year and describes features of the four seasons in relevant contexts			
Measurement	Length	Shares relevant experiences in which measurements of lengths, heights , mass and capacities are used, for example, in baking and other meaningful contexts		Describes and compares common objects' lengths, heights, mass and capacities using everyday language, including long/longer, short/shorter, tall/taller, heavy/heavier, light/lighter, more/less/same		Estimates, then measures, the length, height, mass and capacity of common objects using a range of appropriate non-standard units			
	Mass								
	Capacity								
Patterns & Relationships		Copies simple patterns involving objects , shapes and numbers		Continues simple patterns involving objects , shapes and numbers		Creates simple patterns involving objects , shapes and numbers			
Shape		Recognise and describe common 2D shapes and 3D objects by attribute e.g. straight, round, flat and curved			Sort common 2D shapes and 3D objects according to attribute e.g. shape, colour, size				
Angles, Symmetry and Transformation		Correctly uses some of the language of position e.g. in front, behind, above, below		Begins to correctly use some of the language of direction e.g. left right, forwards and backwards to solve simple problems in relevant contexts		Identifies and describes basic symmetrical pictures with one line of symmetry		Creates basic symmetrical pictures with one line of symmetry	
Data Handling and Analysis		Uses knowledge of colour, shape, size and other properties to match and sort items in a variety of different ways	Collects and organises objects for a specific purpose	Asks simple questions to collect data for a specific purpose	Contributes to a concrete or pictorial display where one object or drawing represents on data value, using digital technologies as appropriate	With support interprets simple graphs, charts and signs and demonstrates how they support planning, choices and decision making	With support applies counting skills to ask and answer questions. Makes relevant choices and decisions based on the data		

# Early Level Tracker 2

Measurement	Money	Identify coins and assign values Up to £2		Put them in order of value Up to £2		Use 1p, 2p, 5p and 10p coins to pay the exact value for items to at least 10p.		Apply addition and subtraction skills	
	Time	Can sequence Months in the year	Recognise everyday devices used to measure or display time.	Talk about everyday devices used to measure or display time.	Engage with everyday devices used to measure or display time including, sand timers, clocks, calendars, and visual timetables.	Use appropriate language when discussing time including before, after, o'clock, hour hand and minute hand..		Read analogue and digital o'clock times (12 hour only) and represent this to a digital display or clock face.	
	Length	Compare and describe the lengths, heights ,mass and capacities using everyday language, including longer, shorter, taller, heavier, lighter, more and less.				Estimate them measure the length, height, mass and capacity of familiar objects using a range on non-standard units.			
	Mass								
	Capacity								
	Patterns and Relationships	Copies simple patterns involving objects, shapes and numbers.		Continues simple patterns involving objects, shapes and numbers.		Creates simple patterns involving objects, shapes and numbers.		Find missing numbers on a number line within the range 0-20.	
Shape, Position and Movement	Shape	Recognise 2D shapes and 3D objects according to various criteria, eg: straight, round, flat and curved			Describe 2D shapes and 3D objects according to various criteria, eg: straight, round, flat and curved.		Sort 2D shapes and 3D objects according to various criteria, eg: straight, round, flat and curved.		
	Angles, Symmetry and Transformation	Understand and correctly use the language of position and direction, including in front, behind, above, below, left, right, forwards and backwards to solve problems in movement games.				Identify, describe and create symmetrical pictures with one line of symmetry.			
Information Handling	Data Handling and Analysis	Apply counting skills to ask and answer different questions and make relevant choices and decisions based on the data.			Contribute to concrete or pictorial displays where one object or drawing represents one data value, using digital technologies as appropriate.		Interpret simple graphs, charts and signs and demonstrate how they support planning, choices and decision making.		

# Core Experiences and Outcomes

## Technologies

I understand that sequences of instructions are used to control computing technology.

**TCH 0-14a**

I can experiment with and identify uses of a range of computing technology in the world around me. **TCH 0-14b**

I can develop a sequence of instructions and run them using programmable devices or equivalent. **TCH 0-15a**

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# Early Level Tracker

Digital Literacy	<a href="#">Using digital products and services in a variety of contexts to achieve a purposeful outcome</a>	Recognises different types of digital technology	Uses digital technologies in a responsible way with appropriate care	Identifies different applications and programs by icon	Logs on to devices with a password/ passcode	Opens and closes a pre-saved file	Identifies and consistently uses the close icon
	<a href="#">Searching, processing and managing information responsibly</a>	Identifies and uses images and key words when searching for specific information		Demonstrates an understanding of how information can be found on a website (text, audio, images, video)		Understands they should not use materials that belong to others without permission	
	<a href="#">Cyber resilience and internet safety</a>	Demonstrates understanding of appropriate behaviour and language in the digital environment	Some awareness of what to do and who to ask for help if something inappropriate happens while using a device		Identifies where passwords and passcodes are used in school and at home		Understands the importance of having passwords and passcodes
Computing Science	<a href="#">Understanding the world through computational thinking</a>	Classifies objects, and groups using simple categories	Identifies similarities and differences between objects	Begins to identify patterns (objects and information)		Identifies beginning and end of an everyday process and recognises there are steps in between	Can give a set of instructions or directions in correct sequence
	<a href="#">Understanding and analysing computing technology</a>	Understands that computers follow a process and need precise instructions	Follows a simple set of instructions using visual representation (e.g. arrows)	Understands that devices can be controlled and respond to commands	Predicts what a device (or person) will do when given a simple set of instructions	Follows and designs simple algorithms for a programmable device (or person) to carry out a task (e.g. directions to a goal)	Identifies computing devices and everyday technology in the world around them and the impact it has on their daily life
	<a href="#">Designing, building and testing computing solutions</a>	Uses directional language (e.g. forwards, backwards, turn)		Identifies and corrects errors in a simple set of instructions or algorithm			Uses key language of computational thinking

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# Other Experiences and Outcomes

## Literacy and English

As I listen and take part in conversations and discussions, I discover new words and phrases which I use to help me express my ideas, thoughts and feelings. **LIT 0-10a**

## Sciences

I have experienced, used and described a wide range of toys and common appliances. I can say 'what makes it go' and say what they do when they work. **SCN 0-04a**

## Expressive Arts

Working on my own and with others, I use my curiosity and imagination to solve design problems. **EXA 0-06a**



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# Other Experiences and Outcomes

## Health and Wellbeing

In everyday activity and play, I explore and make choices to develop my learning and interests. I am encouraged to use and share my experiences. **HWB 0-19a**

I am aware of my own and others' needs and feelings especially when taking turns and sharing resources. I recognise the need to follow rules. **HWB 0-23a**

## Social Studies

Within my everyday experiences and play, I make choices about where I work, how I work and who I work with. **SOC 0-18a**

## RME

As I play and learn, I am developing my understanding of what is fair and unfair and the importance of caring for, sharing and cooperating with others. **RME 0-02a**



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# Promoting my confidence, creativity and curiosity - some key aspects of what I need from my learning environment



## Experiences

From birth  through my early years of childhood

In all experiences notice and encourage my schematic play - through the process of my repeated actions I am learning about my world and how things work.

- Consider my senses. Provide me with a range of experiences I can see, touch, hear, smell and taste. Talk to me about the sensations I experience and notice how I am responding.
- Encourage my freedom of movement to kick, bounce, roll around and explore with my body.
- Take me outdoors to experience the wonder of nature, for example seeing how things move in the breeze and feeling the sensation of the wind in my face.
- Allow me to get messy and explore and investigate different textures such as painting with my fingers or squelching mud through my toes.
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- Give me lots of opportunities to mix and combine messy materials.  
  
Provide me with materials to make clear marks with a variety of tools and equipment, such as crayons, chalks, pencils and paints with different sizes of brush. Provide a selection of paper, neatly arranged to help me see what's available and make choices for myself. Value my efforts through how you talk about, display or help me share my creations with my family.
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# Overarching themes for numeracy and mathematical learning from birth through the early years of childhood

## When I am a toddler...

- Provide richly illustrated books with representations of number, shape and pattern to support conversations with me around these concepts.
- Sing and recite counting songs and rhymes with me, linking to visual representations using rhyme and rhythm.
- Encourage me to notice and use numbers as I explore my environment.
- Encourage me to have fun and play with numbers; investigating and experimenting with quantity, through comparing and contrasting a variety of objects using mathematical language such as less than, more than, same as.
- Continue to give time and space for me to explore toys and materials from different angles.
- Encourage me to move around freely to investigate my surroundings in terms of position and how my body works.
- Ensure my water and sand play is developing more specific language around pouring, measuring, volume, and capacity.
- Provide a variety of materials for me to explore, discussing with me categorising and sorting concepts such as hard, soft, wet and dry.
- Encourage me to sorting and play with patterns, supporting me to identify the characteristics of different objects.
- Encourage me to identify and explore shape within natural contexts and environments.
- Enable daily outdoor play which encourages me to explore natural materials through movement and to gain an understanding of textures, weights and sizes of items.

## When I am a young child...

- Continue to provide me with richly illustrated story books with representations of number, shape and pattern to support conversations around these concepts.
- Continue to sing and recite counting songs and rhymes linking to visual representations of numbers that involve counting, ordering and recognising number.
- Encourage me to notice how numbers are evident in my environment and to enjoy using and writing numbers for a purpose.
- Continue to encourage me to play with numbers, having fun investigating and experimenting with quantity, through comparing and contrasting a variety of objects using mathematical language such as less than, more than, same as.
- Support my understanding and use of positional language within everyday experiences and through activities such as role-play, board games, digital technologies and programmable toys.
- Continue to include water and sand play to encourage me to explore, experiment, test and extend ideas developing more specific language and understanding around pouring, measuring, volume, and capacity.
- Provide a variety of materials which encourage my reasoning through experimentation, trial and error and prediction based on my developing understanding of mathematical concepts.
- Encourage me to create my own patterns and sets of objects, identifying and talking about the characteristics we notice together.
- Encourage me to identify and explore shape and symmetry, developing an understanding of characteristics within natural contexts and environments.
- Enable daily outdoor play which encourages me to explore size and perspective through my movements and by seeing familiar objects from a different angle, height or distance.

→ through my early years of childhood



# Have a go



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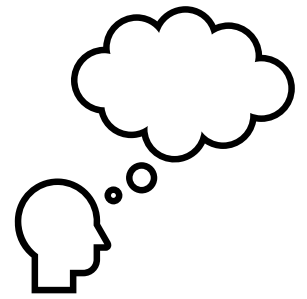
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# Final Thought



“To improve learning, technology must be used in a way that is informed by effective pedagogy”

**Using Digital Technology to Improve Learning**

Use technology in ways that improve learning

<https://educationendowmentfoundation.org.uk/education-evidence/guidance-reports/digital>

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<https://blogs.glowscotland.org.uk/gc/gccleadersofearlylearning/>



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# Leaders of Early Learning 'Early Years Play with Technology'



Gemma Macdonald  
Katie McGowan

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