

SCIENCE & TECHNOLOGY

Science and technology play a vital role in fostering curiosity, creativity and critical thinking in children, helping them make sense of the world around them through everyday play, conversations and hands on exploration. These lay the groundwork for understanding scientific concepts, mathematical thinking, technical processes and help connect abstract ideas with real-life experiences.

Through science and technology children can begin to see themselves as capable thinkers and problem-solvers. Rather than focusing on the right answer, emphasis is placed on the process of wondering, exploring, trying, failing and trying again. This builds confidence, resilience and perseverance. Science and Technology affords children the freedom to ask questions, explore boldly and discover the joy of finding things out.

Opportunities to engage in science and technology should be woven throughout children's daily routines and interactions. Whilst this may not be represented within a dedicated Science & Technology area, settings may use investigation stations filled with resources that encourage scientific thinking and independent exploration based on children's current interests.

Likewise, opportunities are present across multiple provision areas, for example, the iron or microwave in the home corner or involving children in ordering snack ingredients online using the smartboard/computer.



Remember!

Science and technology learning can take place with everyday household objects, open-ended loose parts, recycled items and real-life tools.

CURRICULAR & DEVELOPMENTAL

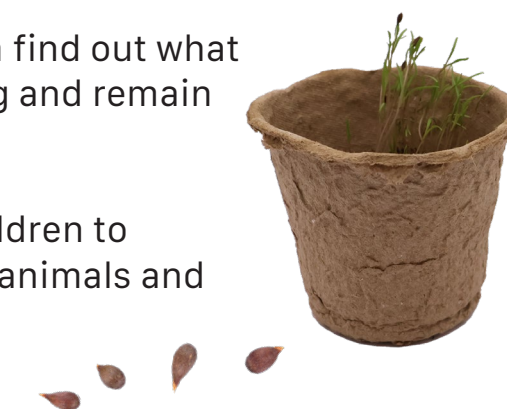
Health & Wellbeing

Engaging with Science & Technology affords children opportunities to experience feelings of excitement, joy, success and pride, as well as frustration and failure, creating possibilities to explore ways to process and regulate emotions.

Through considering science and technology through the lens of the wider world of work, children can discover different sector specific roles and develop aspirations for their own future. For example, becoming a doctor, robotics engineer or marine biologist.

When learning about the human body, children can find out what nutrients their bodies need to grow, become strong and remain healthy.

Furthermore, science and technology supports children to develop understanding of the life cycles of plants, animals and other living organisms.



Literacy

As children experiment with and observe science and technology processes, they are exposed to a range of new and unique vocabulary, for example "*absorb*", "*gravity*" and "*circuit board*".

At this stage, children are developing an awareness that information can come from a range of sources and that they can learn new things regarding science and technology by finding and gathering information from books, texts, websites and posters.



For activities such as logging onto a computer or mixing different ingredients to make playdough, children follow symbols, sequences and instructions, learning that these have meaning.

Maths & Numeracy

When navigating different spaces using programmable toys, such as Beebots, children learn positional language, simple directions and can engage in early coding opportunities.

Science and technology experiments and experiences afford children the opportunity to collect data, process and sort the information, discuss their findings and present these in different ways, such as charts and drawings.

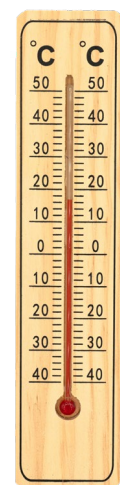
Children can develop awareness of size and amount which supports the real-life application of measurement.

As children conduct a variety of experiments, they engage with the language of chance, uncertainty and probability.



Other

Predictions and estimation are critical elements of science and technology; children can develop these skills through engaging in experiments, such as predicting what will happen to the paper boat in the water tray. Will it sink or float?



Science and technology afford children the opportunity to learn about the natural world and biodiversity, including how plants grow, weather cycles, and how our bodies and senses develop.

Children have the opportunity to engage and experiment with simple forms of force through everyday play experiences, for example, swirling the water to create a whirlpool effect or pushing and pulling a toy vehicle on different surfaces.

Through engaging with their nursery environment and their local community children can make sense of how things work in their daily lives and develop understanding of how technology impacts upon the wider world of work and society. For example, using a fob for the photocopier or getting an x-ray at the hospital.

ROLE OF THE ADULT

When exploring new science and technology, it's important that practitioners remain playful and curious, joining the child where they are and learning together.

Practitioners should be mindful of using the correct terminology, introducing children to new vocabulary, such as *"react"*, *"predict"*, or *"condensation."*

Staff should ensure that they maintain awareness of recent advances in science and technology appropriate to early years.

Adults can support children to extend their thinking and go further through careful open-ended questions, such as *"how can we make this stronger?"* or *"what do you think will happen if?"* This encourages children to test ideas, think critically and reflect on outcomes.

It is the practitioner's responsibility to ensure that devices are charged, functional and with available storage space.

Children need to be shown how to use resources properly in order to understand, respect them, and eventually use them independently. Therefore, practitioners should model appropriate use and function.



ROOM STRUCTURE & LAYOUT

Science and Technology should be embedded throughout the environment, both indoors and outdoors, as part of everyday play and learning across all provision areas. For example, construction areas afford possibilities for design, balance, engineering, predicting and problem-solving.

Smart boards, tablets and computers can support exploration of technology. These should be easily accessible and located in an area where children can concentrate and focus on developing skills.

Outdoors spaces are ideal for supporting engagement with science and technology, offering opportunities for exploring nature, weather, forces and materials. Activities such as den and obstacle building, gardening and water play enable children to investigate concepts like habitats, life cycles and physical properties.

To encourage scientific thinking and independent exploration, it's possible to have designated investigation stations with resources such as magnifying glasses, mirrors and magnets. These areas can be intentionally planned according to children's current interests.



RESOURCE IDEAS

- Magnifying glasses, bug catchers, observation kits, light tables/boxes, torches
- Planting pots, soil, seeds, gardening tools
- Thermometers, weather symbols and charts
- Magnets and magnetic objects, shapes and pattern materials
- Measuring cups, pipettes, funnels, measuring tools
- Floating and sinking objects
- Programmable toys, walkie talkies
- Camera or tablet, laptop/computer
- Blocks, loose parts, ramps, pulleys
- Books – fiction and fact
- Simple switches
- Pens, pencils, clipboards, blank, lined and squared paper

REFLECTION POINTS

- How do staff track children's progress, depth of knowledge and understanding of science and technology?
- Are science and technology experiences and resources accessible and inclusive, enabling children to explore and investigate independently?
- Science and technology resources can often be one-off purchases, for example a tablet, light box or torches. How do practitioners support and encourage children to take responsibility for these?
- The most important part of promoting curiosity, learning and exploration of science and technology is the quality of interactions. How do practitioners encourage and support children to have fun and explore their curiosities whilst persevering and building resilience?

