



Radio Stations : **All Community Radio Stations**
Subject : **Early Childhood Development**
Audience : **Parents, caregivers and educators**
Program No : **Science and technology in the early years (LOVE)**

Guidelines to the presenter

- Presenter – please familiarize yourself with the brief and the use the facts effectively by referring to them from time to time during the show.
- You should be seen as a peer rather than an authority.
- Offer guidance or opinion rather than telling people what to do.
- Encourage people to seek further information
- Always keep the objectives and outcomes in mind and drive these.

Topic:

Science and technology in the early years

Objectives:

- To draw attention to the importance of science and technology in our daily lives.
- To inform parents that science is an attitude and a way of thinking and behaving: of being curious, exploring, experimenting and trying things out.
- To inform parents that babies, toddlers and young children are naturally curious and have a drive to experiment and try things out.
- To encourage them to role model scientific thinking, questioning and behaviour, while providing their children with time, space and materials that encourage scientific play.

- To provide them with ideas on how to use the world around them to stimulate scientific enquiry in their children.

Introduction

Last week we explored lots of games and activities that would promote maths understanding, a positive attitude to maths and children’s self-belief in their ability to do maths. We know that we live in an increasingly technological world and that our children will need to have an understanding of science and technology to be able to succeed in modern society. Join us today as we discover more how to support our young children to feel confident and competent in the fields of science and technology on <Show name>

Questions	Facts/Information
<p>1. <i>What exactly are science and technology and how do they influence our lives?</i></p>	<p>Science refers to a system of acquiring knowledge, which uses observation and experimentation to describe and explain the structure and behaviour of the physical and natural world. The term science also refers to the organized body of knowledge people have gained about a particular subject using that system. Technology, put simply, is the use of science in industry, engineering etc., to invent useful things or to solve problems. It can also be a machine, piece of equipment, method etc. that is created by technology. Both science and technology influence and are used by us in many different ways in our daily lives. Just take cell phones for instance and the way they have changed how we communicate. We all use science and technology and we are all practicing scientists and technologists as well. We all try to provide answers for things we experience; we measure things and we try things out. We also design, adapt or make things, even if this is only cooking dinner or putting up a shelf. Babies’ earliest sensory experiences involve touching, tasting, smelling listening to or looking at things</p>

<p>2. <i>So, in the last couple of weeks we have learned so much about the importance of language in the child's development of literacy and maths understanding. Does the same apply to science and technology?</i></p> <p>3. <i>What do you mean by this?</i></p>	<p>– many of which are the products of scientific or technological activity. Babies are born curious and wanting to explore and find out more about their world. This is the basis of scientific thinking. When we first place a mobile above a baby's cot, we are setting off a process of scientific observation and thinking!</p> <p>While language is obviously a very important brain building block that enables small children to make meaning of their world and to understand, think, problem solve and be creative, science thinking is also about attitude and approach.</p> <p>Science thinking is about being curious, about exploring, experimenting and trying things out. It's about asking questions and looking for answers. It's about predicting what might happen, testing your prediction, noting what happened and drawing conclusions. It's about problem solving and using logic and prior knowledge to a new situation to find an answer. From the earliest days of life, a child develops beliefs about the things that happen in its surroundings. In their pursuit of knowledge, baby pokes, pulls, tastes, pounds, shakes and experiments. Baby lets go of a rattle and it falls to the ground; it does it again and the pattern repeats itself. It pushes a ball, which rolls across the floor. It does this again and again with the same result. All these are early attempts to understand the world around her and how</p>
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<p>4. <i>So what is the parent's role in developing scientific thinking?</i></p>	<p>things work. As the child grows older, all of his experiences of pushing, pulling, dropping, lifting, throwing, feeling and seeing things, stimulate the development of generalized sets of expectations about how things work and the ability to make predictions about a wider range of experiences. By the time a child receives formal teaching in science, she has already constructed a set of beliefs about a wide range of phenomena. She is already busy with scientific thinking and doing!</p> <p>Once again, it's the parents' role to be engaged playmates who spend quality time with their little one and provide the young child with lots of opportunities to play with, explore and experiment with a wide range of materials and objects. Mums and Dads need to be good role models of curiosity; asking lots of questions relevant to the child and wanting to find out answers. They should NOT provide the answers even if they know them. The key is in the child's active experience of experimenting and finding out. Children are natural scientists and they love to 'spontaneously wonder' about the world around them. 3 to 4 year olds are renowned for asking masses of questions about anything and everything. 'Why is the sky blue?' 'What happens to tadpoles?' 'How does a torch work?' 'Why are tree leaves green?' Try to see the world through your child's eyes, and your wonder and imagination about the world</p>
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<p>5. <i>What kind of materials should parents provide to encourage scientific exploration and thinking in their children?</i></p>	<p>around you will be awakened once again!</p> <p>Often it's about looking with new eyes at all the things around us – air, water, sand, soil, rivers, plants, animals and our own bodies, as well as the way other objects work – balls, toy cars, blocks, construction toys, radio and anything else in the child's world. Imagine how difficult for a school going child to understand atmospheric pressure in tyres if you had never understood the concept of air as a substance in the early years. Parents can encourage 'air play' by blowing air at their little ones; letting air escape from a bottle under water; making soap bubbles; playing with balloons and by watching the wind and catching it in kites and sails. This is science at work! Bath time and water play provide a wonderful opportunity for scientific exploration and experimentation – pouring from one container into another teaches volume, capacity and the effect of gravity! Which one holds more or less water? Why do some things sink and some float? What floats and why? Can we make something that floats sink by filling it with sand or stones? What happens when you let go of a sealed bottle full of air under the water? Sand too provides plenty of opportunity to experiment with weight (heavy and light), capacity (more, less, full, empty etc.), different texture and shapes depending on whether the sand is wet or dry; the ability to make patterns in the sand; to dig</p>
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<p>6. <i>And what about nature around us?</i></p>	<p>deep holes or make mountains and rivers. Sand and water together will occupy your little one for hours of fun, exploration and experimentation. This is chemistry, physics and natural science all rolled into one!</p> <p>Absolutely! Teaching your children to be observant about the plants and animals around us is a wonderful way to encourage scientific thinking. Help your children to observe their own bodies, body parts, movements, hunger and thirst and elimination of waste. Help them understand how their bodies work. Encourage them to observe other animals – What are they called? What noises do they make? What are they covered with? (skin, hair, feathers, scales) How do their mouths differ and why? (teeth, beaks etc) What do they eat? Where do they live? How do they have their babies? What are their babies called? Look carefully at mammals, reptiles, insects, spiders, birds and any other creatures in the environment. Teach your child respect and care for living creatures. If you don't know the answers to questions your child asks, have fun finding out together. If you have a smart phone or access to internet, google is a wonderful tool. So of course are books and the library. Do teach your child how to look for and find information.</p> <p>Going on a walk takes on a whole new meaning. Start to observe, compare and look for</p>
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<p>7. <i>So it's not about adults providing the right answers?</i></p>	<p>similarities, differences and patterns in nature. Categorise, count and use natural objects to create – for example making leaf rubbings, or creating a picture with shells. Observe the weather each day and keep a chart where you help your child gather data on how many sunny days in a week.</p> <p>Gardening with your little one is a wonderful way of helping them understand plant life and the sequence of events – planting a seed in the soil; the need for sun and water to grow; the sequence of growth, flowering; producing more seeds and then eventually death. The story of plants can be a gentle way of helping young children understand life and death of a loved one.</p> <p>No it's not. Knowing the right answer requires no decisions, carries no risks and makes no demands. It is a thoughtless activity. Children need to know that questions and experimentation are just as valuable as knowing the right answer. Scientific thinking requires children to construct questions, actively investigate; to discover and construct their own ideas; to collect data and probe for answers. It's an active search for knowledge or understanding to satisfy curiosity. As parents – stimulate and encourage your young child's curiosity; call his attention to significant details; measure and count; compare and analyse;</p>
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<p>8. <i>Are there other household activities that can encourage young children to explore, experiment and try things out?</i></p>	<p>encourage her to predict and try out her predictions; plan and try out solutions to problems; help him to reflect on what he has learned. An environment that fosters scientific thinking is one that gives young children the time, space and materials to exercise their curiosity, explore and experiment. Help them to evaluate what worked, what didn't and why.</p> <p>The kitchen is a great place for experimentation. Your 3 year and older child will love to be involved in baking or cooking. Through this, she will learn to fill, stir, pour; to measure, add, estimate, predict and try out. He will be learning about dry/wet, full/empty, more/less, half/whole, big/small, hot/cold, warm/cool and many other important concepts. She will learn that things change when you mix them together (chemistry!) – what happens when you add egg or milk to flour? How does an egg or a potato change when you cook it? How can you cut an apple to make sure everyone has a piece? Can you make sandwiches have different shapes? Just remember that all activities in the kitchen need to be supervised very carefully to ensure that no one gets burned, cuts themselves or swallows something that could choke them. For 4 to 5 year old children, you could make a picture sequence recipe for the child to follow. This would help them interpret symbols and follow a series of instructions – all important skills.</p>
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<p>9. <i>What about toys that encourage scientific exploration?</i></p>	<p>There are many many objects and materials in your environment that encourage scientific thinking for children, and many things you can make. However, there are also some old favourites such as wooden blocks, jigsaw puzzles and construction toys that fit together like Lego. If you can't gather together a whole lot of wooden off-cuts for your child to play with, collect all sorts of sizes of boxes for her to build with. She will learn to stack and manipulate; to balance and create matching symmetry. He will learn about shapes and sizes and use these boxes to create representations of other things like houses, farm yards, garages, vehicles and other things. Boxes will stimulate his imagination, his problem solving and his creativity. Playdough or clay are other useful materials. They can be used to roll, flatten and create 2 and 3 dimensional objects. Children can experiment with size, shape, length and mass. At the end of the radio programme I will give a simple recipe for playdough, so get paper and a pencil ready.</p>
<p>10. <i>Can you give us the recipe for playdough now?</i></p>	<p>Certainly! And get your child to help you add the ingredients, mix and make the playdough! Science in action! Take 2 cups of flour; 1 cup of salt; 2 tablespoons of oil; 2 cups of water; 2 tablespoons of cream of tartar. Mix all ingredients well. Put in a pot and cook slowly over low heat, stirring all the time for 5 to 10 minutes. When it forms a ball and is less sticky,</p>

	<p>take it off the heat and add food colouring.</p> <p>Knead well. Keep it in a sealed plastic bag. It should keep for a few months. And above all – have fun!</p>

Conclusion

So once again, we've learned the important role parents play in the brain development of their children. Caring for and feeding your young child's brain is just as important as caring for him and ensuring she has nutritious food. The foundations for literacy, numeracy, science and technology are all laid in the early years from birth. If we want our young children to do well in school and life, we need to lay strong foundations through spending quality time with them to support their active play, exploration and experimentation, as they learn about the world around them.

Spending quality time with your little one is an investment in his future! Invest in LOVE, PLAY, TALK!

Thank you for joining us today on <Show name>. Be sure to listen again next week to our next topic as we look at how to choose a good ECD centre or preschool for your precious son or daughter.

Learning outcomes

After listening to this show the audience should:

- understand the importance of science and technology in our daily lives.
- Know that science is an attitude and a way of thinking and behaving: of being curious, exploring, experimenting and trying things out.
- Know that babies, toddlers and young children are naturally curious and have a drive to experiment and try things out.
- Be encouraged to role model scientific thinking, questioning and behaviour, while providing their children with time, space and materials that encourage scientific play.
- Gain ideas on how to use the world around them to stimulate scientific enquiry in their children.