

learn



Encouraging critical thinking and problem-solving skills through hands-on science activities

Little SCIENTISTS

THROUGH HANDS-ON-EXPERIENCE AND TINKERING, CHILDREN CAN SHARPEN THEIR CRITICAL THINKING AND REASONING CAPABILITIES.

Children are curious by nature. At Science Centre Singapore, this curiosity is encouraged through purposeful play in a make-believe environment that includes a construction site, a fossil dig site and a supermarket, among others. You can find these sites at KidsSTOP, an area in the Centre designed to engage children between 18 months and eight years old.

“Here, children learn to relate to familiar objects in a fun and engaging manner. Using their imagination, they learn how to solve problems through the roles they play,” says Associate Professor Lim Tit Meng, Chief Executive of Science Centre Singapore Board. “For instance, when pretending to be a construction site engineer, children think about how to transport objects around the site. In the ‘supermarket’, children learn about nutrition, think about healthy eating choices, and discover where different produce come from,” explains Assoc Prof Lim.

GETTING IN DEEP INTO SCIENCE

“To help develop their critical thinking and problem-solving skills, children should be given the opportunities to inquire, investigate and innovate when having fun with science,” says Assoc Prof Lim.



Inquire: Let children observe what is happening. Allow them to describe and ask questions about what they have noticed. Introduce new words related to the science activity or concept.



Investigate: Instead of simply telling them the answers, encourage children to find out the answers with you. Let them explore and test out the solutions, using simple tools such as a magnifying glass, measuring cups or a weighing scale.



Innovate: Encourage children to experiment further with a science topic. For example, when exploring if a fruit sinks or floats, extend the activity by getting the children to make the floating fruit work like a boat. “This process of learning, which progresses from investigation to innovation, is similar to what an engineer would do when designing and building a real boat,” says Assoc Prof Lim.

Unearthing a ‘fossil’



Photos courtesy of KidsSTOP

OUTSIDE THE BOX

The ECDA Innovation Guidance Projects (IGPs) aim to enhance the quality of children’s learning experience. The IGPs provide pre-schools with the opportunity to explore less conventional ideas and approaches in their curriculum and pedagogical practices by partnering community and government agencies. The community partners provide training and organise sessions for the educators to share about their projects. You can find more information on the IGPs at <https://www.ecda.gov.sg/Educators/Pages/ECDA-Innovation-Projects-Grant.aspx>.

Read on to know how educators and children from four pre-schools benefited from the partnership with Science Centre Board.



Role-playing as doctor and nurse

1 CREATIVE CURIOUS TINKERS

by MOE Kindergarten @ Punggol View



Through a “Soap Studio” tinkering project, children explored a range of ideas to design and create simple tools used in soap-making. They created simple tools such as sieves, hand-mixers and moulds using materials such as plastic bowls, plates, cutlery and old toys. “Through teacher-facilitated discussions, the children explored the functions and features of their self-created tools and discussed how these contribute to making soap. The project had helped stimulate children’s curiosity and spurred them on to look for answers to their questions,” says mentor teacher Ms Sharifah Nooraishah. She explains that tinkering also gives children the opportunity to explore and investigate through play.

✓ **Use household or recyclable items to recreate things and explore new ways to use them.**

2 MAGNETISM

by My First Skool @ Blk 329 Ang Mo Kio



The centre set up a tinkering corner with recycled materials such as cardboard boxes and toilet rolls, as well as a magnetism kit from Science Centre Singapore. “As children observed how magnets attract and repel, they wondered why and how it happens. With these

questions in mind, we created opportunities for the children to hypothesise, predict and experiment what objects are magnetic and non-magnetic,” says centre principal Ms Cheryl Tan. Besides learning about the scientific properties of magnets, children also picked up new vocabularies such as ‘attract’, ‘repel’, ‘magnetic’ and ‘non-magnetic’. They also learnt to work cooperatively in pairs, and communicate their discoveries and ideas to their peers.

✓ **Give children sufficient time to observe, question, hypothesise, predict, investigate, interpret and communicate their thoughts, ideas and discoveries.**

3 THE EARTH WE SHARE

by Jamiyah Kindergarten



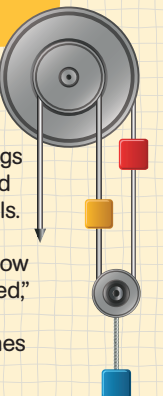
The children conducted simple experiments, based on what causes natural disasters such as tsunamis, volcanic eruptions, landslides and earthquakes. For example, to find out more about underwater volcano formation, the children placed a bottle of hot water into a container filled with cold water. The hot water in the bottle rose to the brim of the container and circulated at the top. “Through this experiment, the children started thinking about the idea of why hot water rises and cold water sinks. The hot water then remained at the top of the container and created what looked like an erupting volcano. We had several discussions on this and about the forces of nature,” explains Ms Yasotha Veerappa, Centre Principal.



✓ **Encourage children to find evidence for their assumptions and ideas. The library is a great place to start!**

4 SIMPLE MACHINES

by PCS Ghim Moh Centre



Children have an innate fascination with the things around them. Building on this, the project helped children hone their observation and thinking skills. “We conducted field trips to Science Centre Singapore and community centres to observe how objects like flagpoles and parking ramps are used,” says teacher Ms Maranan Ninia Sevasothie Del Campo. From observing how the simple machines work, to thinking about it and asking questions, it made the children more aware about simple machines and their functions. “We made sure that the questions we asked stimulated their curiosity and triggered further questions such as ‘why does the flag rise when I pull the rope downwards?’ and draw their own conclusions,” she adds.

✓ **Have group discussions so that children can listen to different perspectives and ideas about the same topic or issue.**



SHARPENING THINKING AND REASONING SKILLS



18 Beanstalk

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THINK AND TINKER

Some activities you can do to help foster critical thinking in your little ones:



- 1 Use paper to make origami such as an air plane, boat or animal shapes, and discuss the life or function of the object that you have made.
- 2 Plant some seeds in the garden or in jars. Observe, discuss and record the plant's growth.
- 3 Recycle old toys. Have fun modifying and play these toys in a different way. You can dismantle old toys and examine the parts together with your child. Depending on your child's age, you can talk about how certain mechanisms such as the spring, lever or magnet work.

Have Fun Exploring Science



PARENTS, NAME THREE THINGS YOU CAN DO WITH YOUR CHILDREN AT KIDSTOP.

HOW TO WIN

Submit your answer to beanstalk@mediacorp.com.sg with your name and contact details. Closing date: 28 February 2018



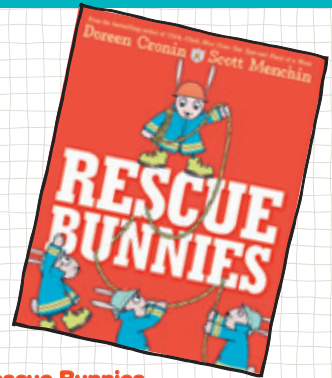
TOP PRIZE X 1
ONE-YEAR KIDSTOP FAMILY MEMBERSHIP



CONSOLATION PRIZE X 3
KIDSTOP TICKETS FOR 2 ADULTS AND 2 CHILDREN

get THINKING

READING IS ONE OF THE BEST WAYS TO NURTURE YOUR CHILD'S COGNITIVE DEVELOPMENT.



50 Fantastic Ideas for Sharing and Playing

By Sally and Phill Featherstone



During the early childhood years, it is critical for a child to learn and think how to work and play with others. Using the creative ideas in this book, learn how to structure fun and practical activities that will teach your child to think about the importance of sharing, cooperation and other essential values.



Contributed by *Xavier Lim*, Associate Librarian, National Library Board



Rescue Bunnies

By Doreen Cronin



A giraffe is trapped and it is up to the Rescue Bunnies to save her. As hungry hyenas move in, Newbie, a trainee, convinces the other Bunnies to stay to help. This exciting story will teach children an important lesson about problem-solving and helping others in need.



Contributed by *Chan Xin Yi*, Associate Librarian, National Library Board

