

# Learning Science, Mathematics and Technology at Small Fry Nursery.



This information sheet has been designed to **give parents information** about the **learning that happens every day at Small Fry** and **ideas for learning at home**. **It is focussed on mathematics, science and technology learning.**

**Three Small Fry** play contexts have been chosen. These are **the Sandpit**, **the modular play set** and **the block corner**.

**Three home** learning contexts have also been chosen. These are **cooking**, **housework** and **bath time**.

***This is not intended to be a complete guide; it is to get us thinking about science, mathematics and technology learning opportunities.***

The idea's in this information sheet do not require parents to leave the home, however, there are rich learning experiences out in the community that are extremely valuable for your child. Here are some ideas:

**Very Close to home:** St Heliers Library. The local beach is one big sandpit. Feed the seagulls, and try to name all the birds you see correctly. Can you find other sea life? Playing on the playground allows a child to experience physical geometry (Mathematics) and forces (Science). Play in the sand and construct (technology), experience the textures (science) and use different shaped buckets (mathematics). Feed the ducks, pukekos and gulls at Tahuna Torea and name all the different birds. Visit Kelly Tarltons. Visit a café and talk about the experience, the textures, temperatures, how long it takes to get served...

**In Auckland:** Motat, The Auckland Zoo, Butterfly Creak, The Museum.

## Science, mathematics and technology in the Sandpit.

Children are learning **scientific concepts** when they experience the nature of substances. The texture of sand changes when water is added. Adults know about solids, liquids and gasses and we have learnt the difference by experience. In order to learn in primary school and high school science classes we needed to have prior knowledge and the appropriate



language. Children are learning **mathematical concepts** when they fill containers of different sizes and shapes with water and sand. When children plan to make something together they are engaging in the **technology** process. Small Fry sandpit also encourages role play by providing the oven to cook meals, cakes and biscuits in. Role play connects what the children see their parents doing at home to their learning at Small Fry.

## Science, mathematics and technology cooking at home.

Cooking allows children to experience **chemical reactions** (science). It also allows them to hear the language of **measurement** and see the tools that measure (mathematics). Baking cookies allows children to experience **texture** (science). There are rich mathematical learning opportunities in relation to the **time** it takes to cook and the **temperature** that the oven needs to be set to. The **technology** process can be incorporated by allowing your child to make suggestions to alter the recipe in some way. For example the chocolate chip cookies pictured can be made with raisins instead. Muffins are another good recipe to change.



You can improve your child's **mathematical vocabulary and scientific knowledge** by talking to them whilst you are cooking dinner. Below are some ideas to get you started:

- I am running a bit late today. I will cut the potatoes smaller so they will cook faster.
- Do you know where potatoes come from?
- Can you set the timer for 20 minutes please?
- The importance of handling of raw meat in a safe manner can be discussed.



## Science, mathematics and technology using the modular outdoor play set.

The **scientific** learning that takes place includes learning about forces, wet surfaces are slippery surfaces, the equipment is always set up on the grass because it is a softer surface to land on. The **mathematical** learning that takes place includes physical geometry. In this context physical geometry refers to spacial awareness, moving one's body through the course requires the child to estimate their reach and size in relation to the course. The **technology** process is experienced through constant redesigning of the course. The children help to plan the new course and evaluate the value of each new design.

## Science, mathematics and technology learning that occurs whilst helping out at home.

**The dishwasher:** Loading and unloading the dish washer teaches physical geometry. Forces are also experienced if a plate is dropped or handle too quickly. When the child cleans up the mess they can observe the permanent physical change that has occurred. If a child is allowed to take all the plates out of a cupboard, clean the cupboard and replace them in a new format they are experiencing the technology process.

Tidying the **Book Shelf:** Arranging books in a tidy manner involves problem solving, physical geometry and draws attention to books that may have been forgotten about.

Cleaning the **car** with a parent: learning oppurtunites include dicussions about where the water goes, the effect that too much cleaning products have on the sea, how much water is used, the time it takes to clean the car.

**Setting the table:** Counting the people, plates, cutlery (mathematics). Designing a centre piece for a special occasion (technology). Placing mats on the table for hot dishes (scientific knowledge).

In order to maximise the learning experience for your child add language and new knowledge little and often.

## Science, mathematics and technology in the block corner.

**Physical forces** (science) are explored when constructions fall over intentionally or unintentionally. **Mathematical** three dimensional shapes allow children to develop their spatial awareness. Counting the blocks, comparing heights of block towers and copying an existing creation are all mathematical learning opportunities. When children design, build, then evaluate their efforts, they are using the **technology** process.



## Science, mathematics and technology in the bath.

**Physical forces** (science) are explored when some objects float and others do not. Some objects can both float and sink depending on what the child does with the shape. **Mathematical** three dimensional shapes can be filled with water. Pouring water from one container to another is a scientific and mathematical learning opportunity. When children design, build, then evaluate their efforts, they are using the **technology** process.

You can help by:

Supply used plastic containers: shampoo, conditioner, bubble bath etc. It is best if they are different shapes and have writing on them. Point out where it says how many millilitres are in the container. Encourage the comparison of the bottle and the amount of liquid it can hold. Two different shaped containers that hold the same amount provide a great talking point. Allow the child to cut the containers to make their own boats (when they are dry for safety purposes). Blowing bubbles with a long straw (or mini hose) into a submerged container attempting to get air into it could be role modeled by you. (You may need to purchase a long thin clear plastic piece of hose from a hardware store in order to reach).

In a nut shell: Talking and listening are key components to learning. As adults we need to provide experiences and language. We model how we want the children to learn. We may need to offer twenty learning experiences in order to experience one amazing learning moment. Rich learning takes place when it is part of normal daily routines. Special trips are just the icing on the cake.

Random Quote:

**Most American children suffer too much mother and too little father.**

~Gloria Steinem, *New York Times*, 26 August 1971 <http://www.quotegarden.com/parents.html>

**Additional page as a result of this week's planting:**



We planted vegetables this week at Small Fry.

See the daily diary for details.

**Growing vegetables at home or at Small Fry enables children to experience science, mathematics and technology.**

**Giant Pumpkins are of special interest at Small Fry at the moment.**

**Science:** Exploring the texture of potting mix (physical world). Learning about the life cycle of plants is biology. Watering the plants for the first time might make the fresh potting mix sink down. Issues that arise like snails, birds and frost are excellent learning opportunities.

**Mathematics:** Filling containers with potting mix is experiencing volume and capacity. The time it takes for things to grow is also measurement. Placing one seed in one container is one-to-one counting. Evenly spacing seeds is geometry. Older children could measure growth and graph it in relation to time (statistics).

**Technology:** If children made their own book about the experience, documenting the process, they would experience the technology process. If children designed and built a structure to keep the birds off the plants they would be experiencing the technology process.

Other rich learning contexts for science, mathematics and technology: water play, play dough, art works, books, puzzles, the family corner, toilet time... The list goes on and on. Can you think of anything you do with your child that does not allow them to experience some aspect of mathematics or science? One final note: Let the child control the amount and speed of information. No one likes to be lectured! *Be the model of fascination, enthusiasm and creativity.*

You may like to check these out:

<http://www.aucklandmuseum.com/114/stevenson-discovery-centre>

[http://www.tki.org.nz/r/science/science\\_is/](http://www.tki.org.nz/r/science/science_is/)