POTATIS MATEMATIK

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THE BEST RESOURCE

I have always said that the best resource in any education system is the teachers. I had that confirmed during a recent trip to Sweden to attend their biennial mathematics conference. Teachers had the opportunity to display classroom work at the conference centre and, although I didn't understand a word of most of them, an extensive one with the title POTATIS MATEMATIK caught my eye. A classroom teacher had filled three display boards with children's work based on using potatoes to learn mathematics!

Think about it. Hands-on learning with a readily available, cheap (at the right time of the year), bio-degradable, real life, teaching aid which has immediate cross-discipline links to history, geography, science, health, language ... Even though I couldn't read a word of the captions, this teacher I never met, but whom I did discover is named Inga-Lill Dahlkvist and comes from Hagaskolan in Sundsvall, stimulated me to plan a term of work around potatoes. That's what teachers can do for each other.

Let's look at some mathematical possibilities and see if they generate other thoughts in you.

10 KG SHOULD BE ENOUGH

Let's first of all buy some washed potatoes. Ten kilograms should be enough. Then every child can have one (and even write their name on it with water based marker). Perhaps there will be some extra as well.

- Estimate the weight, diameter and circumference of your potato. Which diameter? Which circumference? Check your estimates. How can you check the diameter estimate without cutting, or in some other way puncturing, the potato.
- How far is 10kg of potatoes? Each child estimates how long a line of potatoes will be if all of those in the 10kg bag are placed end to end. Graph the estimates. Carry out the experiment and add the actual result to the graph. Have all the potatoes been placed so that their longest dimension is along the line of potatoes?
- Work with a group of six people. Sort your potatoes into an order according to any criteria you wish. Justify your order as accurately as you can.
- How much does your potato weigh (at your place on the earth)? Estimate, measure, graph in categories such as 0-99 grams, 100-199 grams, 200 - 299 grams etc.
- Find three things in the room which will balance your potato. One must be much bigger than the potato and one must be much smaller.
- How many potatoes does it take to displace a litre of water? What mass of potatoes is this? Does it make a difference to the total displacing mass if you use a lot of small potatoes or a few large potatoes? Follow up by finding the volume of your head! - it helps to have towels handy for this activity.
- Keep a class record for several weeks of the price of potatoes per kilogram. How will this research be standardised?

THE EYES HAVE IT

- How many eyes does your potato have? Count, group the class data and graph.
- McDonald's has standards for the potatoes they use in their fries. Find out what they are. Would your potato be accepted at McDonald's?

POTATO SHAPES

- Estimate and then measure the mass of a potato. Make one cut which you think will make two pieces of equal mass. Check your estimate.
- Estimate and then measure the mass of a potato. Make two cuts which you think will make four pieces of equal mass. Check your estimate.
- Using only three cuts, what are all the possible numbers of pieces which can be made? What is the smallest number of pieces? What is the largest number of pieces?
- Estimate and then measure the mass of a potato. Make three cuts which you think will make eight pieces of equal mass. Check your estimate.
- Carve the pieces of potato from the previous activities to make cubes, pyramids, spheres or pieces of art. Carvings you wish to keep can be wiped dry and coated with a light layer of varnish.

POTATO PLANTING

- Find out how and when to plant potatoes and the type of potato suitable for your area. Arrange an area in the school ground (or if security is a problem, a nearby neighbour may loan a piece of her garden). Explain the planting conditions for potatoes and ask the children to work out how many can be planted in the available area.
- As the potatoes grow, send groups to tend to the soil and gather and record data about their height, or number of leaves or area of the biggest and smallest leaves. It may also be relevant to gather information about the insect life which gathers at the potato garden.
- Keep a running record of the data and of course, at harvest time, count the crop and discuss how to distribute it fairly.

HOME WORK

- How many potatoes does your family eat at a meal? If you ate this many each day how long would it take to use a 10kg bag?
- How many different ways does your family eat potatoes? What are they? Bring your results to school to make a class list of ways to eat potatoes and to add to the class graph showing the number of ways each family eats potatoes.

According to food experts, a diet of potatoes and milk will supply all the nutrients the human body needs. Potatoes contain plentiful carbohydrates and some protein, calcium, and niacin. They also contain a considerable amount of vitamin C. They are cooked fresh and can also be frozen or dried. They are processed into flour, starch, and alcohol and are used as fodder, especially in Europe. In the United States, annual per-capita consumption is 19 kg (42 lb) of fresh potatoes and 13 kg (30 lb) of processed potatoes, such as frozen French fries and potato chips. [The New Grolier Multimedia Encyclopedia (V 6.0.2)]

- Make a class graph of the *average* number of potatoes eaten by each family each day. Separate your data into fresh potatoes and processed potatoes. Keep a record for a month. Make an estimate for each family for a year. How does this compare with the USA statistic above?

FOR THE RECORD

My Multimedia Disc of 1993 Guinness Records list the following facts:

- The largest potato ever grown was 7lb 1 oz.
- The greatest quantity of potatoes peeled by five people in 45 minutes is 830lb 11oz.
- Pringles Potato Chip Factory once produced a single potato chip 23in x 14.5in from potato flour.

What are the metric equivalents to these measurements? Compare these measurements with something which helps you make sense of them. For example, was the greatest quantity of potatoes peeled in 45 minutes a smaller or greater mass than your family car?

THE ART OF POTATO PRINTING

Cut a potato in half to reveal two matching flat surfaces. Cut a simple geometric shape from thin card and trace it onto each surface. On one potato half, cut away from the edge of the shape out to the edge of the potato, so that the geometric shape eventually stands up from the remaining potato surface. On the other half cut a hole the shape of the geometric shape leaving the flat surface around it untouched. This process provides a positive and a negative stencil for the same shape.

- Print patterns using the positive and negative. Remember patterns can be in lines, or can fill spaces and the stencils can be rotated within the pattern
- Make a potato printed classroom pattern frieze.

LET'S MAKE POTATO SOUP

INGREDIENTS

500g potatoes (not the ones used for printing) 1 medium sized onion

14g butter or substitute 1.125 litres of white stock (water and milk works well)

50g bacon (optional) 1 teaspoon of salt, pinch of pepper, nutmeg, thyme

Scrub and peel the potatoes and cut thinly. Heat in the seasoned stock until the potatoes are soft. Meanwhile, heat the butter in a pan and lightly brown the finely chopped onion (and the diced bacon if desired). Withdraw the potato stock from the heat and allow to cool slightly before blending. Return to a gentle heat, add the bacon and onion and warm to desired temperature. Stir several times. Serve with a sprinkle of mixed herbs or grated cheese or both. Serves 4.

- Alter the recipe to make enough for the whole class. Work out the cost of making enough for the class. Share this amount equally, organise a shopping list and shoppers and prepare and enjoy the soup together as a team.

Mmmm jättegott! Tack så mycket Inga-Lill. Now let's see what Aussie teachers can do with these ideas.