Introduction

Students will use a variety of methods to record data based on one categorical variable. Students will identify the number of possible outcomes, then create and interpret simple representa9ons of this data.

Resources

- Vowel Spinner Template
- Paper plates, glue, scissors and pens
- Sock Graphing Chart
- Sticky notes
- A bag or a box
- A pair of socks and a similar sock in a different colour
- Unifix cubes
- Text – *Mrs Wishy Washy,* Joy Cowley.
- Grid Charts

Time / Classroom Organisation

This activity may be introduced as a whole class activity and then in small groups as a 20 minute focused teaching and learning event.

Australian Curriculum

Year level: Two

Identify a question of interest based on one categorical variable. Gather data relevant to the question (ACMSP048)
Collect, check and classify data (ACMSP049)

Create displays of data using lists, table and picture graphs and interpret them (ACMSP050)

Proficiency Strand:
Reasoning – creating and interpreting simple representations of data

Activity Process---Sock Pairs

1. As a whole class – Show the students the three socks (one pair and one different) and tell them the following story:
Sam was going fishing. He got up very early and quietly got dressed in the dark so that he didn't wake anyone up. He reached into a drawer and felt 3 socks. Sam picked 2 of the socks and put them on.
Do you think he got a pair?

2. Put the socks in a box or bag. Have 5 or 6 volunteers to act out the story and show the class whether or not they got a pair of socks. Then ask, *Do you think Sam is more likely to get a pair of socks or 2 odd socks? Why?*

3. Write a title on the top of the graphing paper. Did you get a pair of socks? Identify the two possible outcomes: *Yes* or *No* and label the two columns. Have the students work in small groups. Have them label their own graph charts and make a pictograph.

4. To make the pictograph, the students take turns to:
- Pick 2 socks at random from the box.

- Draw 2 socks on a sticky note and colour them to match the socks they picked.

- Stick the note in the appropriate column of the graphing chart.

After each students has had a turn, ask: *What can you tell from the graph? Do you think Sam is more likely to get a pair of socks or 2 odd socks? Why?*

5. Have students then work in pairs to repeat the activity with 4
socks (2 socks in each of 2 colours). Discuss the results.

Source: Graphs and Glyphs.2004. Mimosa Publications Pty Ltd p71

Activity Process---Vowel Spin

1. Ask the students: *How many letters in the alphabet? How many of those letters are vowels? How many of those letters are not vowels? What do we call those letters?*
2. Show the students the vowel spinner. Colour the vowels and check that all the letters of the alphabet are shown on the spinner by saying them out loud.
Ask the students: If you spin the spinner do you think you are likely to get a vowel?
Do you think you are more likely to get a vowel or a consonant? Why?
3. Have the students work in pairs to make a cube graph. To make a cube graph the students take turns to:
- Spin the spinner
- Use a cube to show the results
4. After each student has had 13 goes, the cubes should be linked together to make two towers.

Discuss the results as a whole class. Ask questions such as:
How many people got a vowel?
How many people got a consonant?
Was that close to what you expected? If the vowels were side by side on the spinner, do you think you would be more likely to get a vowel? Why, why not?

6. Adapt the spinner so that the vowels are side by side.

Have the class make 100 spins of each spinner and compare the results. Discuss why the position of the letters should not affect the outcome.
Source: Graphs and Glyphs.2004. Mimosa Publications: NZ p73

Variations & Extensions
1. Mrs Wishy Washy
Resources: *Mrs Wishy Washy* Big Book
Read the story Mrs Wishy Washy to the class several 9mes. Ask the students the ques9on:
Do you like mud? Are the more people in our class who like mud or who don't like mud? How can we find out? How can we record our answers so that we can look quickly and easily to find the answer?
Ask what are the two possible answers?
Identify Yes or No as being the 2 possible outcomes. Provide a sticky note for each child. Ask them to draw a smiling face if they like mud and an unhappy face if they do not. Use these sticky notes to make a pictograph.
Once each student has placed their sticky note on the graphing paper, ask questions such as;
Do more people in our class like or dislike mud? How could you find out how many people voted altogether?
What is a different way that we could show the data?

Work with the class to make a different representation of the data above. Use a clothes---peg

graph or a balance graph or any other representation agreed upon by the class.
Have the students choose the picture that shows their favourite character in the story. Students can then use these pictures to make a pictograph.
Ask questions such as, *Which character was most popular? Which character got the smallest number of votes? How many people voted for the pig? How many more people voted for the pig than for the cow? What are two different ways you can work out the answer from the pictograph?*
Source: Graphs and Glyphs.2004. Mimosa Publications Pty Ltd p62, 63

Digital Resources
hEp://www.ideal---resources.com.au/index.php
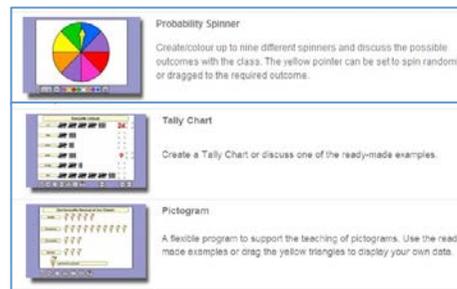
Contexts for Learning:
Play: As students play games of chance ask them to identify the possible outcomes.
Investigation: How many letters there are in your name? Work with the class to identify the longest and shortest names and decide on appropriate groupings for the data; for example, 0---4 letters, 5---9 letters and so on. Label the rows or columns. Each student writes their name on a s9cky note and puts it into the appropriate row or column.
Real life experience:
What is your favourite meal of the day? *Breakfast, Lunch, Dinner*.
Students place a connec9ng cube on a paper plate labelled

with their favourite meal time. Before discussing the data, the students should join each group of cubes together to make a tower.
Source: Graphs and Glyphs.2004. Mimosa Publications Pty Ltd 21
Routines and Transitions:
After reading a number of stories have the students indicate their favourite characters. Work with the students to come up with a variety of ways to represent this data.

Assessment
Place 2 green dots and 4 orange dots on a blank cube. Show the student the cube and ask questions such as, *If I roll the cube could I get red? Are you certain that I will never get red? Why is it impossible? What are the 2 possible outcomes.?(green or orange). If everyone in the class rolled the dice, which colour do you think is the most likely to come up? Why?* Ask the student to roll the dice and record the data using tally marks. Observe the way the student collects the data. Once the data has been collected, ask: *How many times did you get green? ...orange? Which colour was rolled the most often? ...least often? Why do you think there was most orange than green rolled?* Observe the students reasoning.
Achievement Standard: collect data information, create data displays and interpret the information

Background Reading
Using data to answer questions is the essence of 'the scientific method'. Students should learn that: Predictions are not simply guesses, they are 'best guesses', 'informed guesses' or 'judgement calls' based on our previous experience and knowledge, and our theories and analysis. When we test a predic9on we formulate a question or hypothesis and produce data to answer this. Although young children ask many

questions, often they do not consciously think of producing data as a way of answering these for themselves. It is often possible to build on the questions students spontaneously ask so that they learn to think of data collection as an appropriate question---answering strategy.

Source: First Steps. 2005. *First Steps in Mathematics: Space*. Rigby: Port Melbourne p84

Using one thing to 'stand in' for another is not obvious and students need help to make this transi9on from displaying actual things to representing these with tokens and pictures. For example, after lining up according to eye colour, they

might each write their name and draw their eye colour, and use one---to---one correspondence to build up a graph. Such pictographs are a way for students to begin to abstract or simplify information and this development should not be rushed. Students often continue to want to show the identity of each piece of data where information about individual values is increasingly summarised. For example they can replace their personal drawings with a more abstract cross above the appropriate column on a line plot, or colour in a corresponding square to form a block graph. As they progress through the early middle years, students should represent data with increasingly higher levels of abstraction.

Source: First Steps. 2005. *First Steps in Mathematics: Chance and Data*. Rigby: Port Melbourne p140

Links to Related MAGs

1.3.10 Data and graphs ---1

1.4.10 Data and graphs ---2

2.1.10 Data ---1

3.1.10 Data ---1