



Data – 1 2.1.10

Word Wall: number names, data, compare, display, question, check, sort, table, graph, like, unlike,

Introduction

Students will gather data about a personally relevant topic and classify this data into groups. Students will then create and interpret displays, reflecting on the both the information gathered and the type of display used.

Resources

- A 'scary' story such as: *In the middle of the night*, by Graham, 1989.
- 10x10 floor grid
- Post-it notes or pictures to fit the grid squares.
- Paper for displays
- Unifix blocks
- Early Years FISH



Time / Classroom Organisation

The identify, collect and sort section of the activity process may be introduced in a whole group circle or carpet time as a 20 minute focused teaching and learning event. Divide the class into groups to create the displays, and come together as a whole class to interpret the displays. Choose topics of interest to the students and relevant to classroom events.

Australian Curriculum

Year level: Two

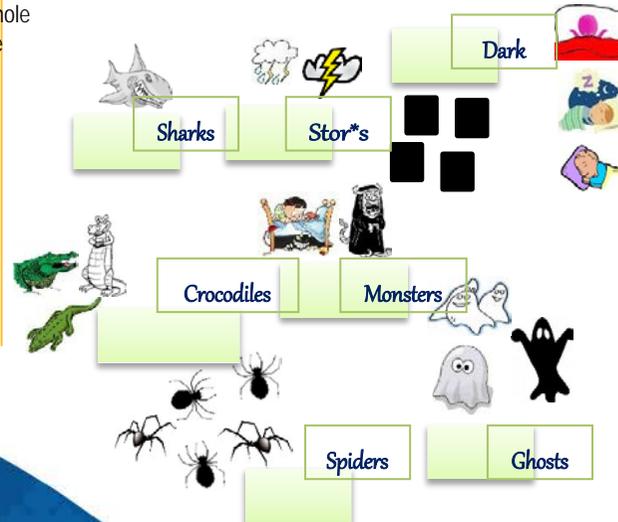
Identify a question of interest based on one categorical variable. Gather data relevant to the question (ACMSP048)

Collect, check and classify data (ACMSP049)

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

Activity Process – Identify, collect and sort data

1. Read a "scary" story such as: *In the Middle of the Night* by Graham, 1989. Ask: *How could we figure out what scares most students in this class? Should everyone say, write or draw what scares them the most?* Discuss students' responses and suggestions, clarifying issues such as one thing per person, just the class or the whole year level/ school?
2. Ask students to draw a picture on a sticky note of the thing that scares them the most.
3. Sit in a circle around the pictures, and discuss the categories that the pictures belong to, for example: *monsters, ghosts, sharks, crocodiles, spiders, bad dreams, storms, the dark.*
4. Sort the pictures into the categories that the students decide upon. Scaffold discussions, for example: whether monsters and ghosts belong in the same group; and support decision making, for example: how do you decide on pictures that could go in two categories, like ghosts in a dark room.



Activity Process – Create and interpret displays

5. Divide the class into groups. Ask each group to display the data about *What most scares most students in our class?*
6. Suggest that they can use a:
 - List

| | | |
|----------|---|---|
| Sharks | - | 1 |
| Storms | - | 2 |
| Dark | - | 4 |
| Monsters | - | 2 |
| Spiders | - | 5 |
 - Table

| Sharks | Storms | Dark | Monsters | Spiders |
|--------|--------|------|----------|---------|
| 1 | | | | |
| 1 | 2 | 4 | 2 | 5 |
 - Picture graph

| | | | | | |
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7. Explain that you will be asking questions about the data and comparing the different displays. Provide paper, pens, post-it notes, 10x10 floor grid, unifix blocks.
8. Support each groups when necessary with prompts on how best to represent their data, for example: suggest tally marks for the list, or suggest the 10x10 grid to create a pictograph.
7. When students have completed their displays, compare the data. Ask questions:
 - Which category of scary things did we have most/least of?
 - What scary things have the same amount?
 - How many more people are frightened of storms than sharks?
 - What most scares students in our class?
8. Reflect on the different data displays. Ask: *Did we get the same information from each of the different representations? Is the data accurately displayed? Which do you find the easiest to read? Would the results be different if we included the year threes?*

Source: *First steps in Mathematics – Chance and Data*, 2009. Rigby: Port Melbourne. Pp. 96, 105, 112.



Catholic Education
Diocese of Cairns

Learning with Faith and Vision

Variations and Extensions

1. Linking with Science: *Waterworks*



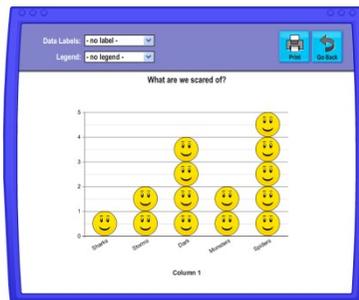
Resources: Primary Connections Science Unit
Complete the 'Water detectives' resource sheet as part of the Waterworks unit. Cut out the drawings of the ways water is used in the home, and ask students to sort these into categories, for example: cleaning, cooking, drinking, gardening, recreation. Organise the data in columns on the 10x10 grid, plotting the categories on the horizontal axis. Discuss and record a name for the graph. Ask questions to support students to analyse and interpret the data, for example: *How many different ways did we use water as a class? How many homes use water to wash clothes? How many water plants? How many use water for drinking? What is the most popular/least popular use of water?*

Source: Primary Connections Project, 2007. *Waterworks*. Australian Academy of Sciences: Canberra

2. Pictograph

Resources: <http://www.mathsisfun.com/data/pictographs.html>

Create a pictograph of the data using the ILLUMINATIONS website. This allows students to label the columns and enter the data to create a graph using digital technologies.



Adapted for use in the Cairns Diocese with the permission of the Catholic Education Office Toowoomba

Interactive Whiteboard Resources

<http://www.ideal-resources.com.au/index.php>

Tally Chart
Create a Tally Chart or discuss one of the ready-made examples.

Pictogram
A flexible program to support the teaching of pictograms. Use the ready-made examples or drag the yellow triangles to display your own data.

Contexts for learning

Play:

As students play a game, for example: snap, ask them to make a tally mark each time they win a point. At the end of the game, add up the tallies and record this score. Repeat this for one week, and compare the data over the week.

Investigation:

On a graph about pets owned by children in our class, I counted two more dogs than cats. What might the graph look like? Children can represent this how they want. Do they realise that the graph may show other pets as well? Allow time for them to explain their graphs to others

Source: Sullivan and Lilburn. 2010. *Open-ended maths activities*. Oxford University Press: South Melbourne. p106

Real life experience:

Collect data how each student comes to school. Ask them to create their own display of the information. Have students compare their displays and say what information they can get from each other's. Ask: *Which display helps you to see which is the most popular way to get to school? Which tells you how the boys in our class come to school?* Ask students how they would change their display to show the different things.

Source: *First steps in Mathematics – Chance and Data*, 2009. Rigby: Port Melbourne. p184

Routines and Transitions:

Ask questions about the graph as students go out to lunch, for example: *What scary thing are most of the children in our class scared of? How many students chose crocodiles as the thing they are most afraid of?*

Assessment

Ask students to represent the data by making a pictograph on their own 10x10 grid.

Ask questions about the data represented in the graph:

- Which category of things are the children in our class most / least afraid of?
- Which categories have the same amount?
- How many people said they are more afraid of the dark than storms?
- If we put ghosts and monsters in the same category, how many would there be in the new category? What would we call it?
- What are we most afraid of in our classroom?
- Would the graph have looked differently if the question had been: *What are year 2 children most afraid of?* (instead of just our class)

Background Reading

Using one thing to 'stand in' for another (as in using a counter to represent a birthday on the graph) is not obvious and students need help to make the transition from displaying actual things to representing these with tokens or pictures. For example, after lining up according to eye colour, they might each write their name and draw their eyes on a sticky label, 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.

Source: *First Steps in Mathematics: Chance and Data*, 2009. Rigby: Port Melbourne. p140

Year three NAPLAN --- Numeracy test links

2008 Question 10– Reads data presented in single table.
2008 Question 12– Reads data presented in a two way table.
2009 Question 3 – Interprets table; adds total displayed in tallies.
2010 Question 1 – Matches a number with tally marks in a table

Links to other MAG's

- 1.3.10 – Data and graphs - 1
- 1.4.10 – Data and graphs – 2
- 2.4.10 – Data - 2