**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK:6 | STRAND: Statistics and Probability | **SUB-STRAND: Data 2** | **WORKING MATHEMATICALLY:MA2-2WM, MA2-3WM**  |
| OUTCOMES: MA2-18SP | **Selects appropriate methods to collect data, and constructs, compares, interprets and evaluates data displays, including tables, picture graphs and column graphs** |
| **CONTENT:**  | **Evaluate the effectiveness of different displays in illustrating data features, including variability (ACMSP097)*** Interpret and evaluate the effectiveness of various data displays found in media and in factual texts, where displays represent data using a scale of many-to-one correspondence
* Identify and discuss misleading representations of data (Communicating, Reasoning)

**Construct suitable [data displays](http://syllabus.bos.nsw.edu.au/glossary/mat/data-display/?ajax" \o "Click for more information about 'data displays'" \t "_blank), with and without the use of digital technologies, from given or collected data; include tables, [column graphs](http://syllabus.bos.nsw.edu.au/glossary/mat/column-graph/?ajax" \o "Click for more information about 'column graphs'" \t "_blank) and [picture graphs](http://syllabus.bos.nsw.edu.au/glossary/mat/picture-graphs/?ajax" \o "Click for more information about 'picture graphs'" \t "_blank) where one picture can represent many data values (ACMSP096)*** Mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs (Communicating)

**Select and trial methods for [data](http://syllabus.bos.nsw.edu.au/glossary/mat/data/?ajax" \o "Click for more information about 'data'" \t "_blank) collection, including survey questions and recording sheets (ACMSP095)*** Discuss the advantages and/or disadvantages of open-ended questions in a survey, compared to questions with predetermined categories (Communicating, Reasoning)
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * Can students recognise and label graphs?
* What is their knowledge of the suitability of certain graphs?
* Can they distinguish different types of graphs?
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| WARM UP / DRILL | * Mix and Match- Give students three different surveys. Discuss the suitability of each survey in terms of the graph that should be used and give reasons why. Open ended/Closed questions.
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Tracey has 7 lollies, Billy has 3 lollies, Jack has 12 lollies and Georgia has 5 lollies. 1. How many lollies altogether?
2. What sort of graph would be most suitable for placing this information?
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| QUALITY TEACHING ELEMENTS | **INTELLECTUALQUALITY** | **QUALITY LEARNINGENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge
* Deep understanding
* Problematic knowledge
* High-order thinking
* Metalanguage
* Substantive communication
 | * Explicit quality criteria
* Engagement
* High expectations
* Social support
* Students’ self-regulation
* Student direction
 | * Background knowledge
* Cultural knowledge
* Knowledge integration
* Inclusivity
* Connectedness
* Narrative
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| RESOURCES | Rulers, pencils, workbooks, IWB, coloured pencils |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| Find some graphs on the internet which give information that the students would be familiar with (tv shows, movies, sports, etc) and as a group analyse the information that they give. The goal of this activity is to look deeper in the information than *“soccer is the most popular.”* Students should be looking for where the information is coming from and why it could be skewed in a particular way. * What is a **misleading or skewed** set of data results? How can a survey be rigged? Why might people use surveys to convey ideas or a point?
* Making graphs that provide students with a chance to evenly space their graphs and make them from scratch. **Discuss** the importance of even spacing and the effects of not doing so.
* What is an open-ended question? What graph is better to use when surveying using open ended questions? What is a closed question?
 | LEARNING SEQUENCERemediationS1 or Early S2 | * Mix and Match- Open/Closed questions.
* Mix and Match- Different Graph types
* Labelling column graphs
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| LEARNING SEQUENCES2 | * Survey an open-ended question and closed question.
* Discuss as a class what graphs should be used to document data? Why are some more suitable than others?
* Graph- graph the open ended question using a column graph. Using grid paper, ensure the spacing is equal. Discuss the importance of the equal spacing. What would happen if we didn’t space equally?
* Pie graph- collect data based on a yes/no question class wide. Record results and enter into pie graph. Following this, ask the same questions to students from other classes. Compare results and create new graphs. Were they different? What was different?
* **Investigation:** Ask the class the open ended question- What is your favourite sport? Students survey and gather their results. Then ask students to do the same question, except this time give students a choice of four answers. How did their data change? Why did it change?
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| LEARNING SEQUENCEExtension Late S2 or Early S3 | * Ask students to make their own graph about something they are interested in. Students will be required to rig the results of the graph so they get results that suit their beliefs. *For example;* student who likes soccer does a survey on “favourite sports” but gives a list of options that are unappealing to choose.
* Discuss the results of the survey. Did you get the results that YOU wanted? What could be the benefits of doing a skewed survey?
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| **EVALUATION &REFLECTION** | **Student Engagement: Achievement of Outcomes:****Resources: Follow Up:** |

* All assessment tasks should be written in **red** and planning should be based around developing the skills to complete that task.
* Assessment rubrics or marking scale should be considered.