**MATHEMATICS STAGE 2**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 5 | STRAND: Statistics and Probability | **SUB-STRAND: Data 2** | **WORKING MATHEMATICALLY:** |
| 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:**  | **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 and decide the most suitable question to investigate a particular matter of interest, eg by narrowing the focus of a question from 'What is the most popular playground game?' to 'What is the most popular playground game among Year 3 students at our school?' (Communicating, Reasoning)
* Conduct a survey to collect [categorical](http://syllabus.bos.nsw.edu.au/glossary/mat/categorical-variable/?ajax" \t "_blank" \o "Click for more information about 'categorical') data
* After conducting a survey, discuss and determine possible improvements to the questions or recording sheet (Communicating, Reasoning)
* Discuss the advantages and disadvantages of different representations of the same categorical data, eg column graphs compared to picture graphs that represent data using scales of many-to-one correspondence (Communicating)

**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)*** Use data in a spreadsheet to create column graphs with appropriately labelled axes (Communicating, Problem Solving)
* Use grid paper to assist in drawing graphs that represent data using a scale of many-to-one correspondence (Communicating)
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | * What is a graph used for?
* Why do we survey?
* How can the information be used?
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| WARM UP / DRILL | * Teacher to show a graph on the IWB which shows results based on a survey of favourite sports in Year 4. Asks for the following information to gauge understanding/comprehension. (See attached)
1. What is the most popular?
2. What is least popular? 3. Based on the information in the graph, what can you tell me about those surveyed?
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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  | Lance conducted a survey on which colour (Blue, Green, Other) was his class’ favourite. Lance received 20 votes for “other” meaning his data is relatively useless. What could Lance change about his survey question to help him get some more accurate and informative data about the class’ favourite colour?  |
| QUALITY TEACHING ELEMENTS | **INTELLECTUALQUALITY** | **QUALITY LEARNINGENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge
* Deep understanding
* Problematic knowledge
* Higher-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 | IWB, workbooks, rulers, coloured pencils.  |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTIONMODELLED ACTIVITIES | GUIDED &INDEPENDENT ACTIVITIES |
| Narrowing questioning to ensure the student gains the data required to make reasonable conclusions about their topic of choice. * **Communicating** effectively with peers to make the surveying process easy for the person conducting and receiving.
* **Class discussion** on reasonable topics to survey amongst peers. What do we need to consider? Why is it important that we gain meaningful data with the survey? Why do we need to ensure our survey topic is relevant to students in our age group?
* **Compare and contrast** the different graphing styles (pie, picture, column, bar) and **discuss** which graph would be most suitable for a particular topic.
* **Show students** how to make graphs using Microsoft word applications.
 | LEARNING SEQUENCERemediationS1 or Early S2 | * What is a pie graph? Students read information from a pie graph and answer questions.
* What is a column graph? Students read information and answer questions from the graph.
* Make a survey about sports that students like playing.
* Put that information into a column graph and discuss results.
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| LEARNING SEQUENCES2 | * Using the survey in above sequence (remediation) discuss with a partner the changes that could be made to make the results for accurate and to give better information about the class group.
* Put the information into a column graph using Microsoft Word. (explicit teaching)
* Ask students to write a slanted piece where the survey will be difficult to gather useable data (for example; Students favourite sport; Rugby League, Soccer, Other) The results will obviously be difficult to measure and gain meaningful data from because there are not many options.
* With the above survey, swap with a partner to finish the survey. They will be required to amend the results option so the survey has more possible choices. Students will then be required to finish off the survey themselves and put that information into a column graph.

Investigation:* Students complete activity four- why did having the extra options help? What conclusions can we make?
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| LEARNING SEQUENCEExtension Late S2 or Early S3 | * Students will look at a pie graph. What is different about it? How is the information presented? How is it different from column graphs?
* Students survey 50 people (about two classes worth) on a topic that is controversial or will get a fairly balanced response (for example; should students be allowed dogs at school?)
* Put this information into a pie graph using Microsoft Word.
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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.