Teacher Resource

Episode 29
20th October 2020

World Statistics Day

Focus Questions

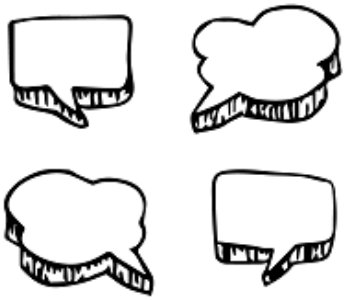
1. Discuss the BTN *World Statistics Day* story as a class and record the main points of the discussion.
2. Working in pairs, write down all the words you associate with statistics.
3. Statistics is a branch of mathematics that involves…
    a. Collecting data
    b. Analysing data
    c. Making sense of data
    d. All of the above
4. The smaller the sample size you have the better. True or false?
5. What is sampling bias? Describe using your own words
6. What are the horizontal and vertical sides of a graph called?
7. Explain an example that Cale used in the BTN story showing a misleading graph.
8. Why is it important that statistics are accurate and reliable?
9. What did you learn watching the BTN *World Statistics Day* story?
10. What questions do you have about statistics?

Activity

Class Discussion

Discuss the BTN *World Statistics Day* story as a class. Record what students know about statistics on a mind map. What questions do they have about statistics? Use the following questions to help guide the discussion.

- What are statistics? Describe using your own words.
- Think of as many words as you can that relate to statistics.
- Where can you see statistics in your daily life? Give examples.
- Do you think it's important to have statistics?
- What can statistics tell us?



Activity

Glossary

Students will brainstorm a list of key words that relate to the BTN *World Statistics Day* story. Students will then use the words to write their own

Key Learning

Students will develop statistical skills and thinking. Students will conduct their own statistical data investigation.

Curriculum

Mathematics – Year 4
Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values.

Evaluate the effectiveness of different displays in illustrating data features including variability.

Mathematics – Year 5
Pose questions and collect categorical or numerical data by observation or survey.

Describe and interpret different data sets in context.

Mathematics – Year 6
Interpret secondary data presented in digital media and elsewhere.

Mathematics – Year 7
Identify and investigate issues involving numerical data collected from primary and secondary sources.

Calculate mean, median, mode a nd range for sets of data. Interpret these statistics in the context of data.

sentences about the topic. Students may want to use pictures and diagrams to illustrate the meaning and create their own glossary. Here are some words to get you started.

Data	Survey	Statistics
Trends	Percentages	Numerical data
Categorical data	Sample size	Graphs

Activity

Warmup game

As a class, play this warmup game “The Truth About Me” to get your students thinking about statistics. Refer to these directions to get started – you just need an open space and room for a circle.

Explain to your students that the aim of the game is to learn more about statistics. Use the directions provided to play the game and then use the reflection questions below to spark a discussion:

- What did you notice?
- Which statements made a lot of people move? Why do you think that is?
- What did you learn about your classmates?
- What did you learn about your class as a whole?

Play the game again, but this time nominate someone (it could be a student or the teacher) who can record the information that is shared by the class, collecting as much data as they can throughout the game.

- Which of the data is numerical?
- Which of the data is categorical?
- What was your sample size?
- How might changing the sample size effect your results?
- What are some different ways that the data could be displayed?
- What is the best way to represent the data you collected? Why?
- What assumptions or conclusions can you make about the data?
- Are your assumptions different to your classmates? Compare.
- Use the statistics taken from the game to tell a story about your class.

Activity

Inquiry Questions

After watching and discussing the BTN *World Statistics Day* story, what questions do students have and what are the gaps in their knowledge? The following KWLH organiser provides students with a framework to explore their knowledge on this topic and consider what they would like to know and learn.

What do I know?	***What do I want to know?***	***What have I learnt?***	***How will I find out?***

Students will develop their own question/s for inquiry, collecting and recording information from a wide variety of sources. Students may develop their own question for inquiry or select one of the questions below.

- Why do we need statistics? Think of 10 reasons why statistics are important. Write an acrostic poem using the word 'Statistics' to teach others about the importance of statistics.
- The theme for World Statistics Day 2020 is "Connecting the world with data we can trust". What does this mean?
- How can you spot a misleading graph? Watch this TEDex video to learn more and then explain ways that you can spot misleading statistics using your own words.

Activity

Statistical data investigation

Students will become statisticians and hold a census in their classroom. As a class discuss what you want to learn about the population of your class. Develop questions to investigate student's experiences, opinions and interests. In small groups, students will design a survey, collect data, sort the information, analyse the data and then communicate their findings. Students can use the following framework to help guide them through the activity.

Research

What do you want to find out about your class? Make a list of questions that you want to ask. Think about the type of data that you can get. See below for some ideas:

- Do you eat breakfast every day?
- How do you get to school? (e.g. walk, ride, drive).
- What is your favourite sport?
- How many hours per week do you use the internet?

Which of the questions are numerical or categorical?
What is your sample size?
How will you collect the data? Design a form or simple table to record the information.
How will you respect privacy and protect confidentiality? For example, do not include your names on the census.
What is the purpose of your investigation? Write a sentence explaining why the data is being collected and how it will be used.

Survey

Survey the students in your class using the questions you have formulated. If you are collaborating assign different roles and responsibilities to each student.

Sort

Sort and enter the information you have gathered into an excel spreadsheet. Use mathematical equations like sum, percentage and averages in your spreadsheet.

Representation

What is the best way to represent the data you have collected? Summarise the information you have gathered and create a graph (e.g. column graph, pie graph, line chart) using excel. Consider drawing a diagram or creating an infographic to highlight the survey results.

Analyse

Analyse your results.

- What do the statistics tell you about your classroom?
- Write a short paragraph explaining the results.
- If you conducted another survey using a different class do you think the results would differ from your class data? Explain.
- Did you have a big enough sample size? If you surveyed the whole school how would this effect the results?

Reflection

- What interesting things did the data tell you about your class?
- How could the results collected from this data help your school make better informed decisions?

Further activity

Make a time capsule which includes the data gathered from your classroom census. Future generations at your school, will be able to learn about the population of your class and then compare to their own.

Useful Websites

ABC Education – Statistics
https://education.abc.net.au/home#!/topic/1566429/statistics

World Statistics Day – United Nations
https://www.un.org/en/observances/statistics-day

How to spot a misleading graph – Ted Ed
https://www.youtube.com/watch?v=E91bGT9BjYk

Census Stats – BTN
https://www.abc.net.au/btn/classroom/census-stats/10524354