re(Solve) MATHS BY INQUIRY

STUDENT PROFILING: Sequence Overview

Summary of learning goals

Students critically assess the Census@School 2014 Questionnaire and make decisions on how they would analyse the data given the type of question and response. They describe the life of a single participant using their survey data and use a range of statistical tools to compare their participant to a larger sample. They use technology such as Excel or TinkerPlots to analyse a large dataset.

Australian Curriculum: Mathematics (Year 10)

ACMSP248: Determine quartiles and interquartile range
ACMSP249: Construct and interpret box plots and use them to compare data sets
ACMSP250: Compare shapes of box plots to corresponding histograms and dot plots
ACMSP251: Use scatter plots to investigate and comment on relationships between two numerical variables

Summary of lessons

Who is this Sequence for?

This sequence is for students who:

- Are familiar with a range of statistical tools such as the mean, mode and average, and the interquartile range.
- Have some familiarity with technology such as Microsoft Excel or TinkerPlots.

Lesson 1: Assessing Data Collection

Students answer and then critically analyse the Census@School 2014 Questionnaire. They are given a single participant's response sheet to the Questionnaire and use these responses to interpret and describe the participant's day-to-day life.

Lesson 2: Being Typical

Students compare a single participant's data to a sample of 550 answer sets and use a range of statistical tools to explore whether their student is "typical".

We value your feedback after these lessons via http://tiny.cc/resource-feedback

Reflection on this sequence

Rationale

Statistical investigations tell a story. In this sequence students use data to tell the story of a single participant in a larger survey, and compare that person to a larger sample. In the process students choose and use appropriate measures of central tendency including mean, median or mode, and make suitable representations such as box plots, histograms or scatterplots. As a result they make informal inferences about how "typical" their participant is.

reSolve Mathematics is Purposeful

- The sequence asks students to explore a real-world dataset and draw comparison to their own lives.
- The sequence supports a rich interpretation of the Australian Curriculum: Mathematics through the manipulation, representation and interpretation of data to tell a story.
- The sequence offers students opportunities to use their creativity and imagination to reconstruct the life of a participant in the survey.

reSolve Tasks are Challenging Yet Accessible

- Mathematically able software such as Excel and TinkerPlots are used to maximise students' sense-making of data.
- Students make choices about the depth of their investigation into the data and the complexity of their findings.

reSolve Classrooms Have a Knowledge-Building Culture

- By interrogating and discussing their individual subjects the class builds a collective understanding of the similarities and differences between subjects in the dataset.
- The construction of a student profile is non-threatening in that there are no right or wrong answers about the participant.

Acknowledgements

The data used in this lesson comes from the Census@School program run in 2014 by the Australian Bureau of Statistics.