Money, Money, Money

Teacher Notes

VICTORIAN BIOSCIENCE EDUCATION CENTRE

Curriculum Links

General Mathematics Units 1 and 2 Outcomes:

Students should be able to:

1. Define and explain key concepts as specified in the selected content from the areas of study.
2. Select and apply mathematical facts, concepts, models and techniques from the topics covered in the unit to investigate and analyse extended application problems.
3. Select and use numerical, graphical, symbolic and statistical functionalities of technology to develop mathematical ideas, produce results and carry out analysis in situations requiring problem-solving, modelling or investigative techniques or approaches.

Area of Study 6: Statistics

Investigating and comparing data distributions:

- display and description of numerical data distributions in terms of shape, centre and spread using histograms, stem plots (including back-to-back stem plots) and dot plots and choosing between plots.
- measures of centre and spread and their use in summarising numerical data distributions, including use of and calculation of the sample summary statistics, median, mean, range, interquartile range (IQR) and standard deviation; and choosing between the measures of centre and spread
- the five-number summary and the boxplot as its graphical representation and display, including the use of the lower fence (Q1 – 1.5 × IQR) and upper fence (Q3 + 1.5 × IQR) to identify possible outliers
- use of back-to-back stem plots or parallel boxplots, as appropriate, to compare the distributions of a single numerical variable across two or more groups in terms of centre (median) and spread (IQR and range), and the interpretation of any differences observed in the context of the data.

Learning Intention and Success Criteria

Learning intention

To investigate and compare data distributions.

Success criteria

- ✓ Use a graphics calculator to construct a histograms and parallel boxplots.
- ✓ Identify the shape of a distribution.
- ✓ Use a calculator to find summary statistics.
- ✓ Identify Q1, median and Q3 from an ordered data list without using a calculator.
- ✓ Use summary statistics to write a report.
- ✓ Compare the centre, shape and spread of data distributions

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Instructions to Teachers

This data analysis task allows students to apply key knowledge and skills required to investigate and compare data distributions. The task emphasises the importance of giving meaning to the statistics and is suitable for consolidation or revision. The task requires a graphics calculator and assumes prior knowledge of graphics calculator use to construct histograms and parallel box plots and calculate summary statistics.