Level 3 – Statistics and Probability

Overview

Task name	What is your favourite?
Learning intention	To determine the most popular digital game device through collecting and interpreting data
Duration	40 minutes

Links to Victorian Curriculum

These work samples are linked to Level 3 of the Mathematics curriculum.

Extract from achievement standard

Students carry out simple data investigations for categorical variables. They interpret and compare data displays.

Relevant content descriptions

- Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies (VCMSP149)
- Interpret and compare data displays (VCMSP150)

Links to NAPLAN

Minimum standards – numeracy

Year 3: Measurement, chance and data – Data

Students meeting the minimum standard record data using one-to-one correspondence and read data presented in simple tables, two-way tables and pictographs with one-to-one or one-to-two correspondence.

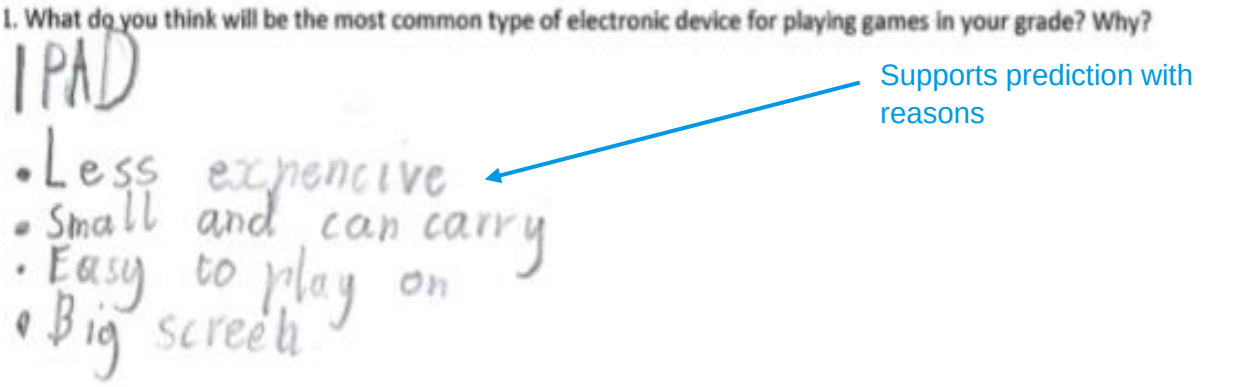
Students read data present in tallies and simple tables. They make statements about familiar events that are likely or unlikely to happen. For example, students can generally:

- read and interpret data presented in lists, tallies, tables, pictographs (1:1 or 1:2 correspondence) or simple column graphs and two-way tables
- make qualitative judgements about data in frequency tables
- identify variation of data in tables and graphs.

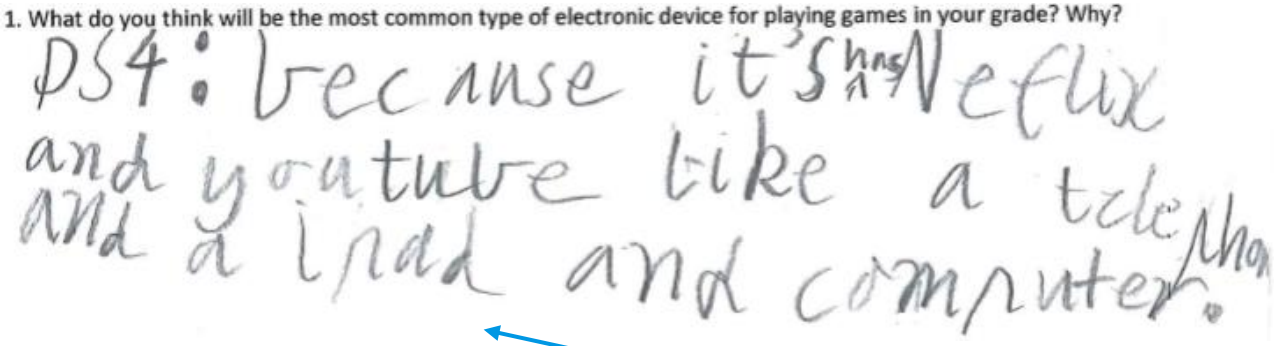
Student work samples – Making predictions

These work samples were created by students working at Level 3. Evidence of student achievement has been annotated.

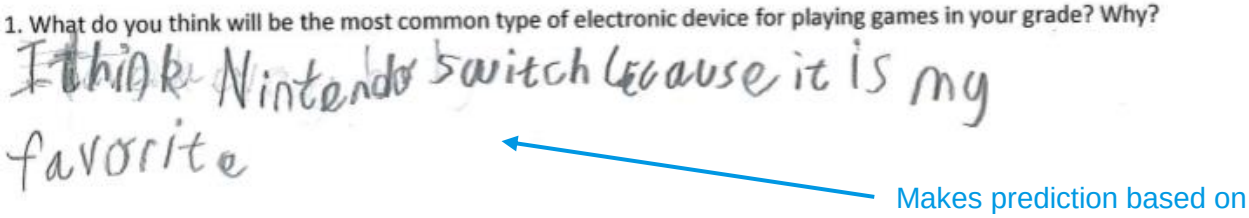
Victorian Curriculum link: Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies (VCMSP149)



Supports prediction with reasons



Supports prediction with comparative reasons



Makes prediction based on personal preference

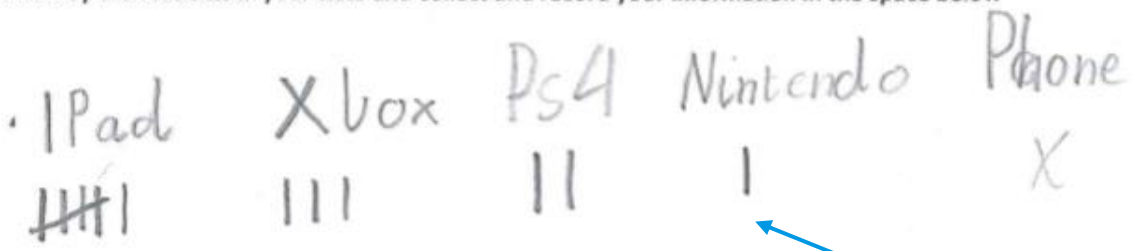
Student work samples – Collecting data

These work samples were created by students working at Level 3. Evidence of student achievement has been annotated.

Victorian Curriculum link

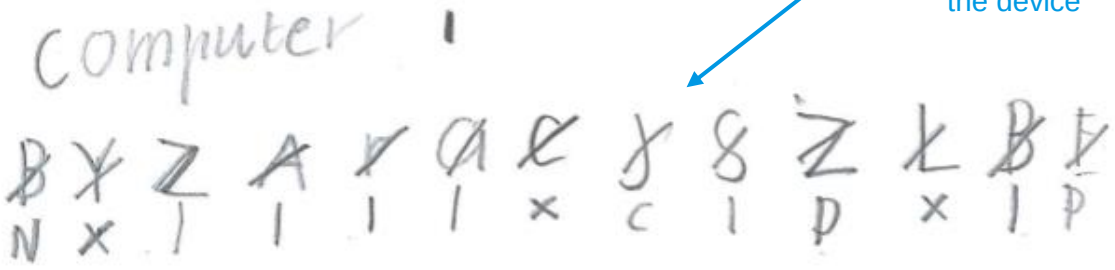
Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies (VCMSP149)

2. Survey the students in your class and collect and record your information in the space below



Collects and records survey results using tally marks

Collects data and records student responses using first name initials and first letter of the device



2. Survey the students in your class and collect and record your information in the space below

ipad	Xbox	Iphone	wii	PS4/PS3	other	total
III		I	I	++++ II	IIII	

Includes an 'other' column

Represents survey results using tally marks

2. Survey the students in your class and collect and record your information in the space below

devices	Tally	total
Phone	III	03
Ipad	++++ |||	09
Wii u	II	02
Tablet	I	01
Other	++++ I	06

Uses a table to represent survey results

Represents survey results using tally marks

Includes an 'other' row

Records the total number of responses for each device

2. Survey the students in your class and collect and record your information in the space below

IP	X	I	PS4	P	C
	✓	✓	✓		✓
	✓	✓			
	✓	✓			
		✓			
		✓			
		✓			

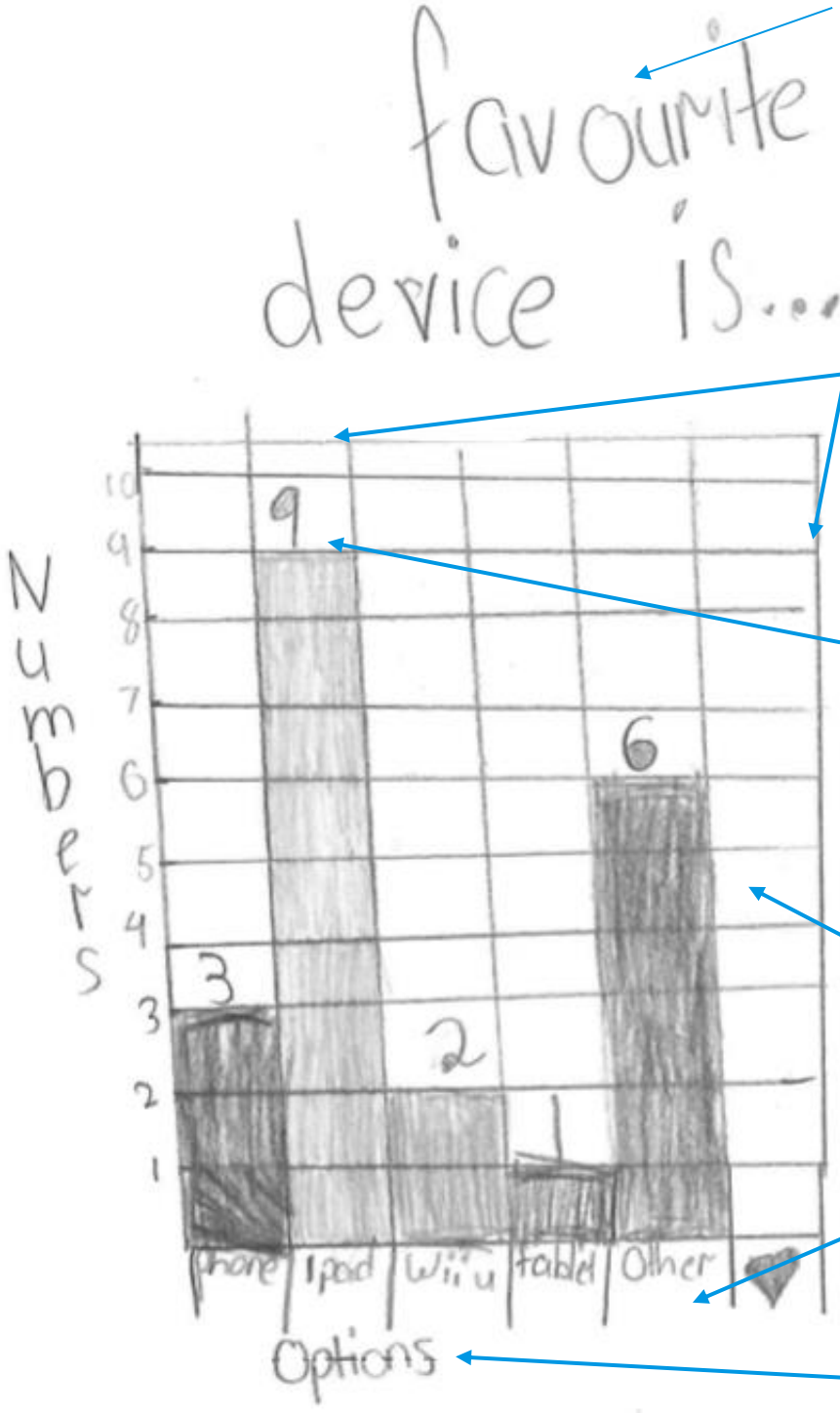
Records survey responses using ticks

Student work samples – Presenting data

These work samples were created by students working at Level 3. Evidence of student achievement has been annotated.

Victorian Curriculum link

Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies (VCMSP149)



Includes a heading for the graph describing what the graph is presenting

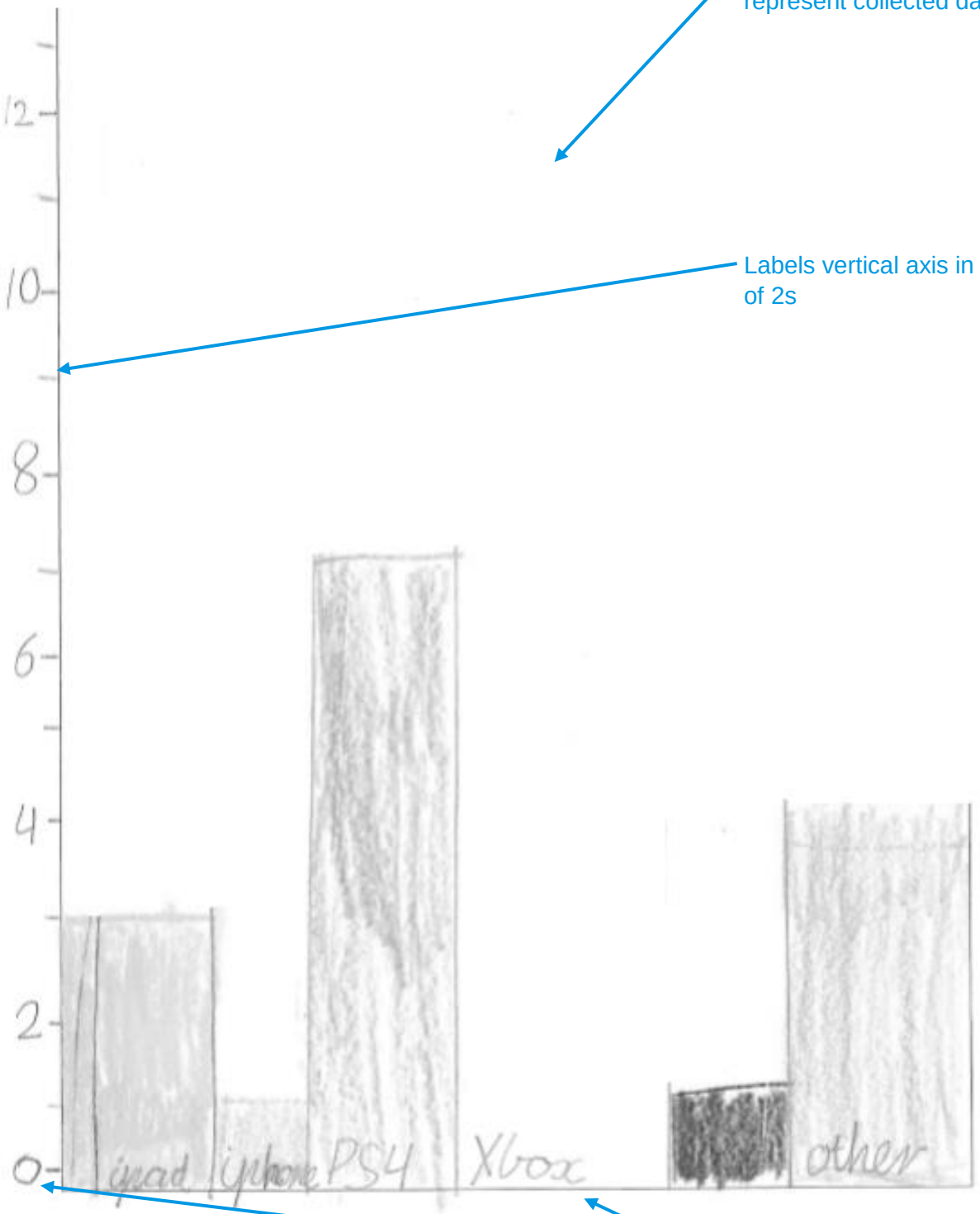
Uses equally-spaced intervals

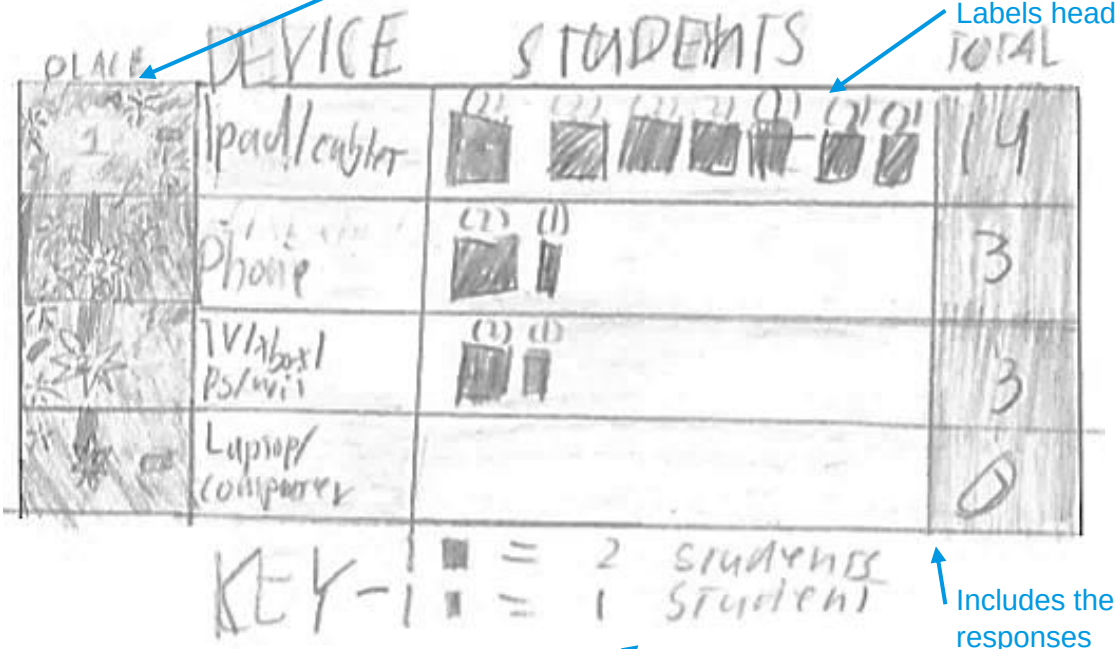
Identifies the total of each column

Creates a column graph to represent collected data

Labels the intervals on the horizontal and vertical axes

Labels axes


Creates a column graph to represent collected data
Labels vertical axis in intervals of 2s
12
10
8
6
4
2
0
ipad
iphone
PS4
Xbox
other
Labels the intervals on the horizontal and vertical axes



Orders the data from most common to least common

Presents survey results in a table

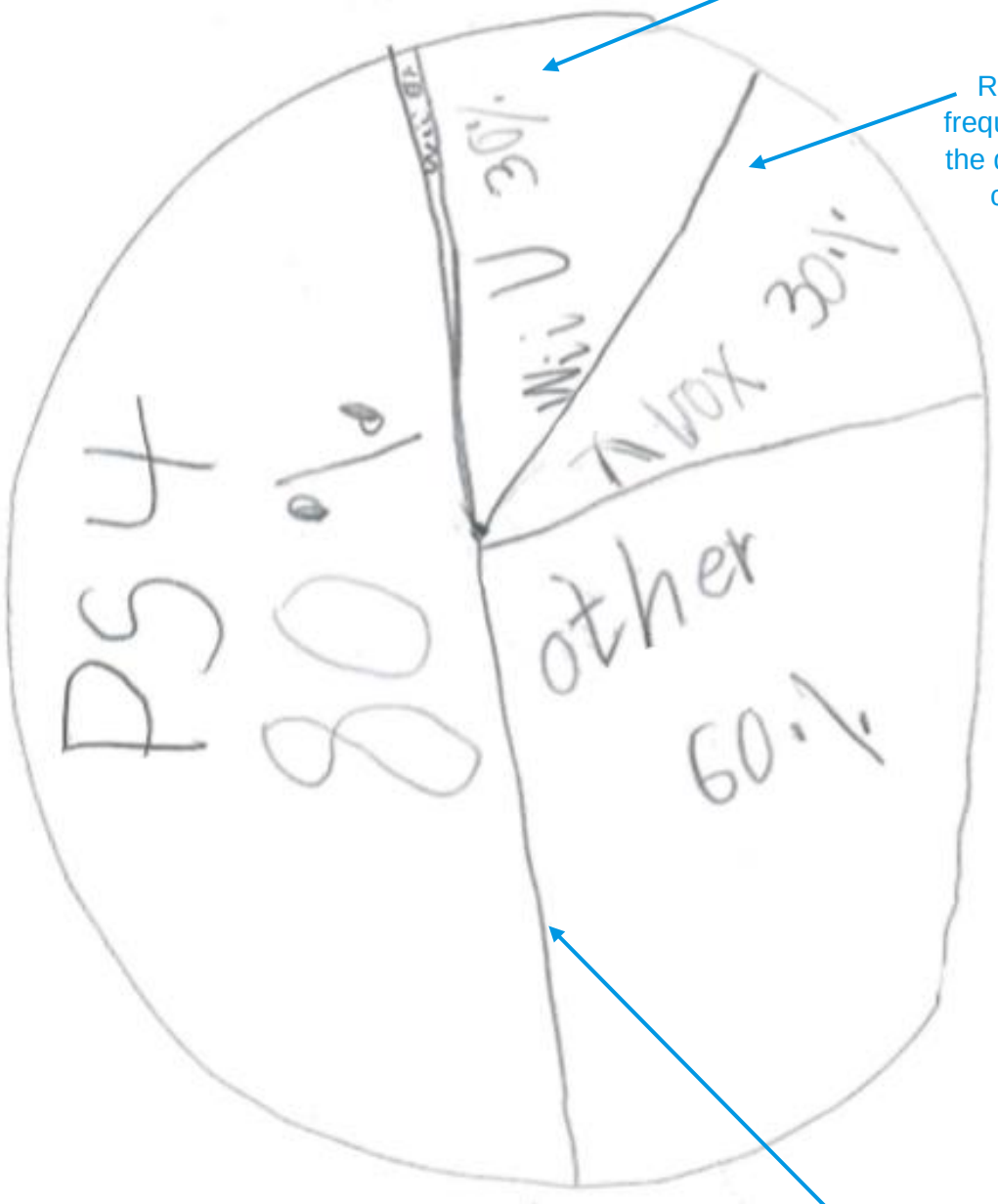
Labels headings of the table

Includes the total number of responses

Provides a key to represent data

3-02's most used device for playing games

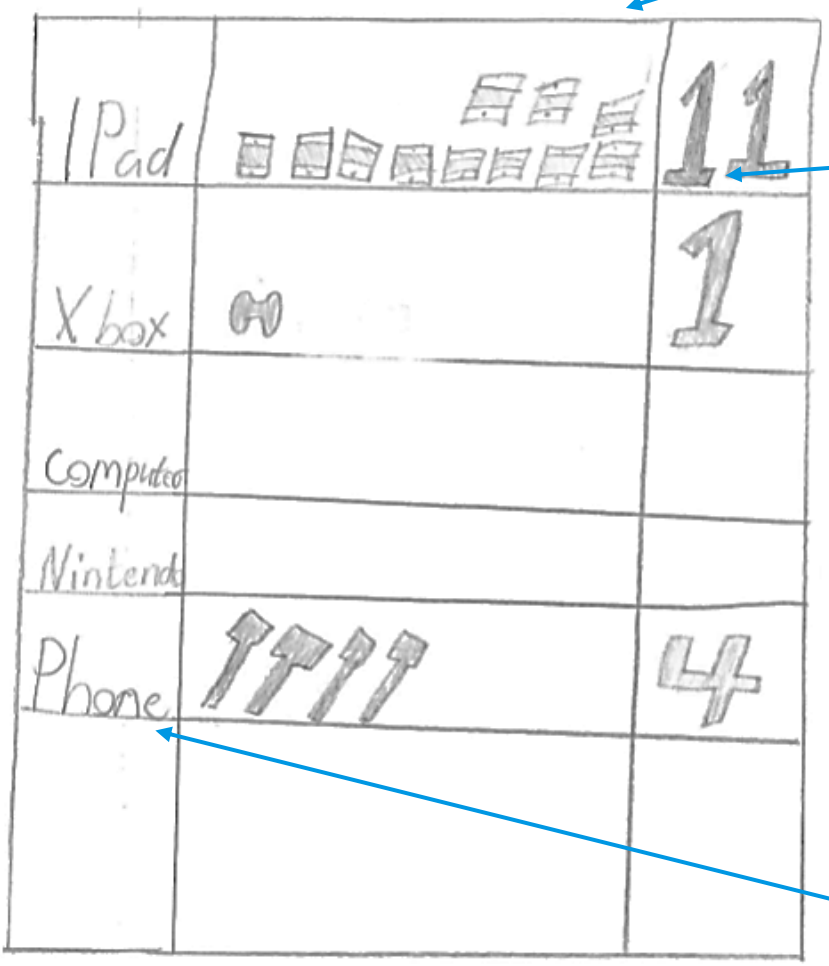
Uses a heading to label the survey results



Attempts to present data in a circular format

Reflects magnitude of frequency in the order of the data and attempts to calculate proportions

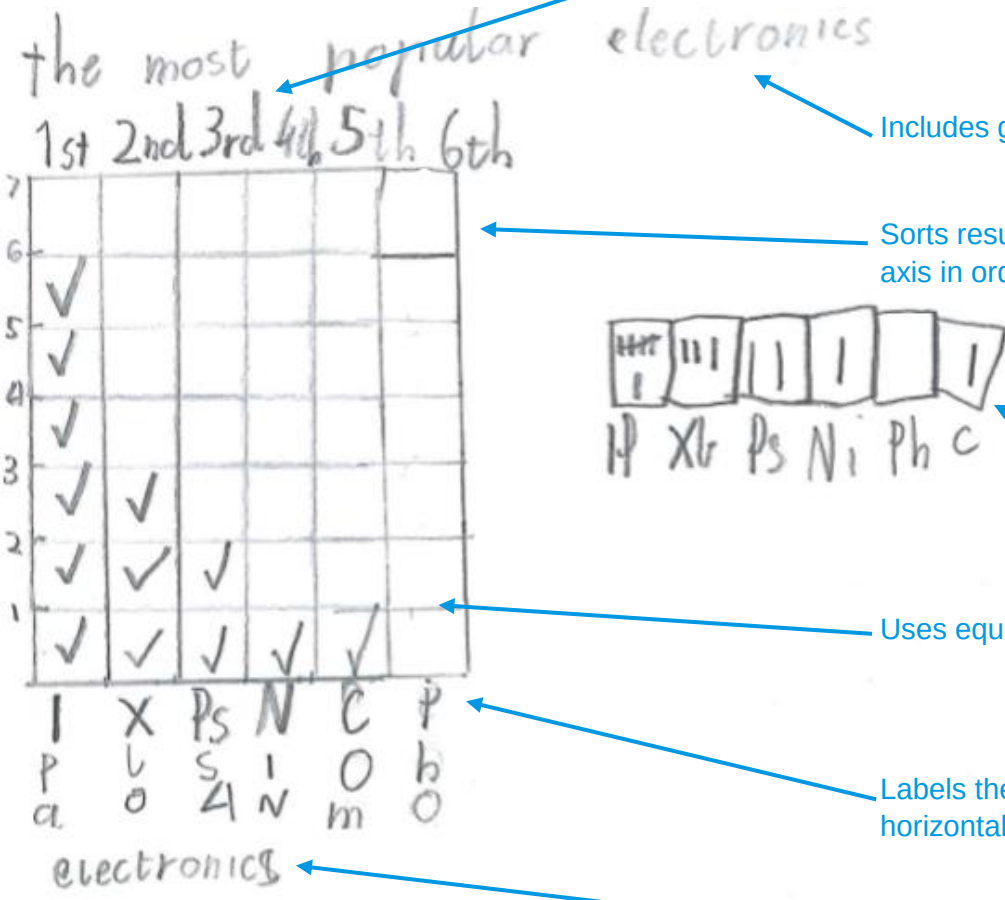
Labels each section of the circular graph



Represents collected survey results in a picture graph (pictograph)

Totals the number of student responses

Labels the columns to represent the items surveyed



Creates a picture graph (pictograph) to present survey data

Includes graph heading

Sorts results on the horizontal axis in order of frequency

Includes a tally of survey results

Uses equal-sized intervals

Labels the intervals on the horizontal and vertical axes

Labels the horizontal axis

Student work samples – Interpreting data

These work samples were created by students working at Level 3. Evidence of student achievement has been annotated.

Victorian Curriculum link

Interpret and compare data displays (VCMSP150)

4. Explain why you chose to represent the data this way

I chose a picto graph because I find it the (somewhat) easyest to read. I also did not feel confident doing a bar graph without a grid.

Justifies selection of a picture graph (pictograph) for presenting data in terms of ease of use

5. Is there a better way to present your collected data? What would this be?

Maybe a little neater, but I don't think there was a better way, because all graphs are the same and they all show data which is the points.

Discusses representation of data

4. Explain why you chose to represent the data this way

because I think line plot is esay to read and it's fun to make.

5. Is there a better way to present your collected data? What would this be?

I think a bar graph is better than a line plot because a line plot is not fun to create and there is no colour. I didn't choose a Pictograph because they're hard to make with all the pictures.

Discusses strengths and limitations of different types of graphs

4. Explain why you chose to represent the data this way

- it's easy to read
- not confusing
- people can easyly see the info

Justifies choice with a level of accountability for others' understanding

5. Is there a better way to present your collected data? What would this be?

I can easyly see the info.

Reflects own reason for choice

Where to next for the teacher?

When the task on which these annotated student work samples is based has been used as a classroom activity, there is opportunity to gather data on student achievement to help inform further teaching.

An analysis of student responses, on an individual, group or whole class basis, can be used to develop and direct student learning with respect to the following content.

For students needing to review underpinning knowledge and skills at Level 2

- Identify a question of interest based on one categorical variable. Gather data relevant to the question (VCMSP126)
- Collect, check and classify data (VCMSP127)
- Create displays of data using lists, table and picture graphs and interpret them (VCMSP128)

For students consolidating knowledge and skills at Level 3

- Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording (VCMSP148)

For students moving on to new knowledge and skills at Level 4

- Select and trial methods for data collection, including survey questions and recording sheets (VCMSP178)
- 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 (VCMSP179)
- Evaluate the effectiveness of different displays in illustrating data features including variability (VCMSP180)

Resources

- Mathematics Sample Programs, Victorian Curriculum and Assessment Authority (VCAA) – This set of sample programs covering the Victorian Curriculum Mathematics: F–10 were developed *as examples* to illustrate how the Mathematics curriculum could be organised into yearly teaching and learning programs.
- Numeracy Learning Progressions, Victorian Curriculum and Assessment Authority (VCAA) – The Numeracy Learning Progressions amplify, extend and build on the numeracy skills in the Victorian Curriculum Mathematics F–10 and support the application of numeracy learning within other learning areas.
- FUSE, Victorian Department of Education and Training (DET) – The FUSE website provides access to digital resources that support the implementation of the Victorian Curriculum F–10, including an extensive range of activities and other resources for Primary Mathematics and Secondary Mathematics.
- Mathematics Teaching Toolkit, Victorian Department of Education and Training (DET)
- Mathematics Curriculum Companion, Victorian Department of Education and Training (DET)
- Victorian Numeracy Portal, Victorian Department of Education and Training (DET)
- Aligned Australian Curriculum Resources (Mathematics), Australian Curriculum, Assessment and Reporting Authority (ACARA)