DIGITAL TECHNOLOGIES HUB

Australian Curriculum V9.0

Acquiring, analysing and visualising data

Explore the properties of data, how it is acquired and interpreted using a range of digital systems and peripherals, and analyse data when creating information.

ACARA, 2022

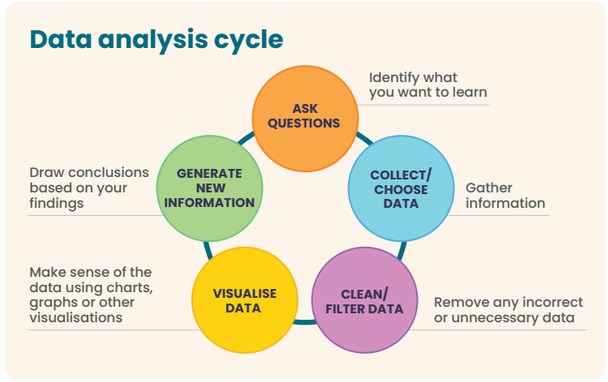
Years 7–8

I can acquire data, organise and analyse it using a spreadsheet to answer an inquiry question, and also use a database to answer a specific query.

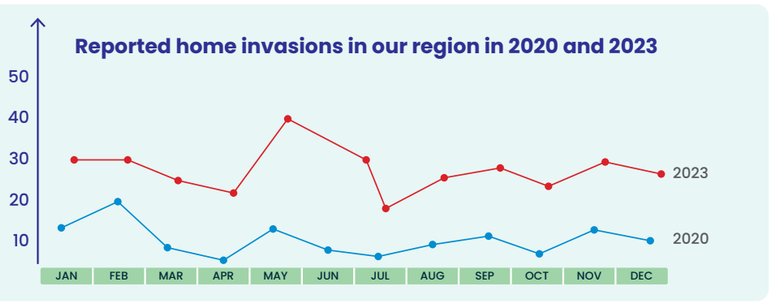
Data can be acquired from various sources, including paper and digital surveys, electronic sensors, fitness tracking apps and online data repositories. This data can be used to answer an inquiry question.

Following a data analysis cycle such as this approach from *Code.org* can provide students guidance with the multi-step process.

Students start the process by acquiring data to answer questions that are of interest and relevant for their own investigations. For example: Is our community a safe place? Are the foods we eat healthy and nutritious? Are all sports inclusive?



Spreadsheets are useful digital tools for organising, analysing and visualising data. Apply spreadsheet skills such as filtering and sorting, using formulas and creating charts. Summarise data to identify trends, make predictions and draw conclusions.



Sort crime data to filter by offence, region and date to identify trends over time. Create charts to visualise the data and support conclusions.

Artificial intelligence (AI) classification systems are trained on vast amounts of data using a process called supervised learning. The AI learns to classify or predict outcomes based on labelled training data. There is potential for these systems to include bias that may unintentionally cause harm to certain groups, for example, a group under represented in the training data may result in unfair outcomes.

Use *Teachable Machine* to practise training and testing an AI model using cartoon faces, some of which have sunglasses. Discuss how the AI system interprets data, sources of potential algorithmic bias, and their impacts.

Databases provide a more complex and organised way to structure data compared to typical spreadsheets. Data in databases is grouped as attributes within records. Students learn to make queries to select data that meets specific criteria, for example, using structured query language (SQL).

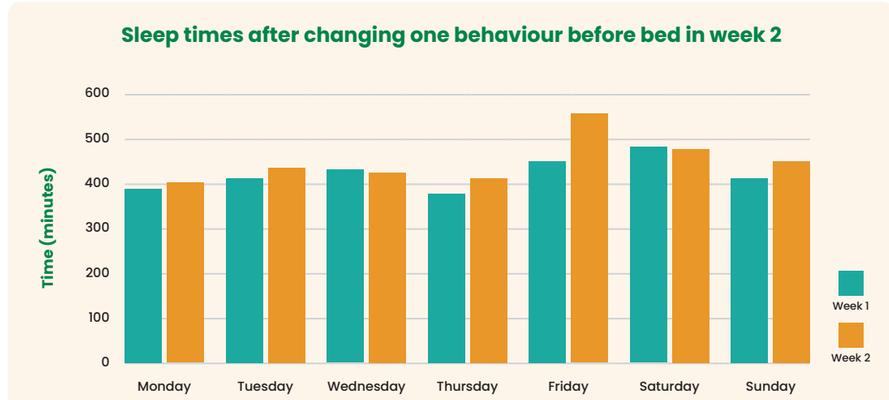
The school library database can be used to introduce simple SQL queries. Use a basic query such as: 'SELECT * FROM Books;' to retrieve all books in the library. Filter with WHERE clause to find all books written by a specific author, for example, SELECT * FROM Books WHERE author = 'J.K. Rowling'; Use ORDER BY clauses, to order by year of publication.

Column name	Data type	Description
'book_id'	INT	Unique identifier for each book
'title'	VARCHAR	Title of the book
'author'	VARCHAR	Author of the book
'genre'	VARCHAR	Genre of the book
'year'	INT	Year the book was published
'available'	BOOLEAN	Availablity status (TRUE/FALSE)

Achievement standard	Students acquire, interpret and model with spreadsheets and represent data with integers and binary.
Content descriptions	Acquire, store and validate data from a range of sources using software, including spreadsheets and databases | Digital Technologies AC9TDI8P01 Analyse and visualise data using a range of software, including spreadsheets and databases, to draw conclusions and make predictions by identifying trends | Digital Technologies AC9TDI8P02 Model and query the attributes of objects and events using structured data | Digital Technologies AC9TDI8P02

Related content

Statistically analyse sleep related data to make informed decisions on daily habits, promoting healthier lifestyles.



Mathematics	Students plan and conduct statistical investigations involving data for discrete and continuous numerical variables; analyse and interpret distributions of data and report findings in terms of shape and summary statistics | Mathematics AC9M7ST03