

Data literacy is the ability to gather data, read data, manage data, analyze data, report results, argue with data, and make data-driven decisions.

Collecting data includes planning the collection process and gathering data. Planning data collection entails identifying the primary and secondary research questions, designing the methodological steps, selecting the tools, and estimating the time required to complete these steps. One can collect data through probability sampling and non-probability sampling.

Reading data involves using senses, software, and code commands and performing analyses and comparisons. Reading data in different formats includes: reading data in tables, spreadsheets, graphs, texts, and infographics. Data reading can be performed through the sense organs only or with the help of software using electronic spreadsheets or specialized software. Reading data analytically aims to understand a set of data logically and globally. To read data comparatively is to read data critically within its context, problematizing data and confronting them with reality.

Managing data involves storing data and handling data. Storing data involves saving data periodically and continuously to a directory on the computer or the cloud. Processing data involves cleaning data; identifying incomplete, incorrect, and inconsistent data; transforming data; identifying data that are in one format and transforming them into another more desirable one; and choosing which is the best representation for the data (tables, phrases, spreadsheets, infographics, among others).

Analyzing data involves planning the analysis, exploring data, comparing data, and analyzing estimates and possibilities without computer assistance or with the help of software, using coding or not. Data analysis without the aid of a computer involves using sense organs and different materials while analyzing data with the help of software involves using electronic spreadsheets, specialized software, or coding in programming language and query language. Planning the analysis involves graphically examining data, measures of central tendency and variability, points outside the curve, correlations, and possibilities. Comparing data involves looking for similarities and disparities. Analyzing possibilities and estimates involves analyzing the possibility of future events based on past or present events.

Reporting results involves representing results in different formats, focusing on cohesion and coherence: representing data in textual format, tables, graphs, and infographics, and knowing how to choose the best format to represent the results.

Arguing through data involves arguing only with data or interweaving data and theories in order to present facts, ideas, logic, and evidence that support a claim; critically arguing about predictions and trends; and arguing relating results obtained in the research with different contexts of social reality, inside and outside the community to which the data refer.

Data-based decision-making involves making decisions based on the analyzed data, using or not using statistical techniques that allow for more accurate and assertive decision-making.