

4 ways to build data curiosity

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Can we find a way to develop statistical curiosity as we encounter data? The answer is yes.



Simon Knight and Kirsty Kitto. Photo by Shane Lo

Data is increasingly around us, in how we understand our elections, meet our partners, engage with our students and are evaluated in our jobs. Data, and the information it can provide to inform decisions, is a key characteristic of 21st century life. But what does it mean to be data literate? And why is it important?

Your Student Feedback Survey results are in. You scored an average value of 3.9 on the question, 'This subject has developed my ability to think critically'. But, what does this average value actually tell you?

You're keen to evaluate whether the changes you made improved students' critical thinking; but does your score help you to work out how effective they were? It's up from 3.7 in the previous session, so it's all good right? Perhaps not.

Taking an average value from a set of Likert responses like this is controversial, and hard to interpret. What's the distribution that lies behind this number? Is the way it changed

significant? How do the two cohorts differ? A data literate person is curious enough to dig deeper, questioning what lies beneath simple reports.

The reality is data permeates our everyday lives, with data literacy – the ability to interrogate, manipulate, and analyse data – increasingly important for every person’s civic participation and their employment prospects.

Unfortunately, for many people, working with numbers triggers a default anxiety, causing them to immediately switch off. Instead of questioning data, examining it, exploring it and using it to tell an underlying data story, people often shut down claiming, ‘I’m no good at numbers’ or ‘I haven’t done any maths since school’.

How then to overcome our fear? Can we find a way to develop statistical curiosity as we encounter data? Yes.

We think that emphasising the ‘why’ of numbers and statistics, not just the ‘how’ of using statistical methods, is crucial. But it takes practice. Here are four ways you can start building data literacy now:

1. Link to real stories

Focusing on the why of statistics means exploring how the numbers help us understand the world, and how misusing or omitting them can lead to problems. By tying the stats to [different kinds of real stories](#), we can explore real-world problems. For example, by analysing the UK’s recent open data on companies’ gender pay-gaps the *Financial Times* uncovered an implausible claim: 16 companies reported a pay gap of zero on two different indicators (the mean and median), which is highly unlikely. Sharing and discussing [real-world examples](#) of how we go from data to story, highlights why data is important for understanding these real-world issues.

2. Use real data

Real stories encourage us to step away from using inauthentic simplified data. Instead, we can focus on using real data, ask why we might want to explore it further, and how we might do that. For example, did you know that despite a focus on America and China being the biggest consumers of coal, Australia is actually the biggest consumer of coal [per capita](#) in the world? Exploring nuance like ‘per capita data’ is harder. When you look at real-world contexts, datasets are often bigger, and come with missing data and mistakes. But it gives you a better picture of the real issues. [Real data](#) also gives people a choice of topical issues to explore, ones that are meaningful to them.

3. Communicate with and about data

Importantly, it isn't enough to just do the analysis (and maybe describe it), you need to be able to interpret it; to show why it matters. By getting people to communicate with the data – face-to-face and through their written work – we can catch a lack of interpretation and any misconceptions about the data.

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For example, what's more dramatic? Spending \$6 million on an intervention in NSW schools or \$2.86 per NSW school student (and how would you check those figures)? Problems like this can help students understand [the challenges](#) of communicating big numbers. Getting them to play a spin doctor, retelling a data story that focuses on the cost of a school intervention either overall or on a per-student basis is an even more effective learning device. By giving examples of [data stories](#), and [data presentations](#), we can model how data can be used and abused in communicating different stories.

4. Don't forget the human

Getting people to communicate about real data is also important because it can expose students to varied datasets on the same issue, and legitimate differences of interpretation. We use data for a reason, and exploring what the impacts of data – and [missing data](#) – are for stakeholders is crucial for civic participation.

For example, in 2016, the BBC asked '[Is there a sexist data crisis?](#)'; using the example of Uganda who shifted their labour survey to include 'secondary occupation' in addition to 'primary'. The results showed a huge rise in employment figures (from 6.5 million to 7.2 million) and most of these 'new employees' were women. Can you work out why? It's because although many women did undertake some paid employment, the survey considered the primary occupation to be domestic duties.

Missing data has an impact on society, making it hard to allocate resources properly, understand inequalities and represent people in media and political decision making.

Even individually, the way we select and interpret data can be influenced by our beliefs and the groups we belong to.

Whether we like it or not, data is increasingly entering all of our lives. We can all benefit from remembering the social and personal aspects of data, from using it more carefully, and by considering what is not there with as much interest as what is there.

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