

# Data Analytics and Leadership



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Good afternoon! It's nice to be here with you all, albeit virtually. I hope your sessions so far have been productive. Thank you Bala for the introduction.

My name is Alexis Carr and I am the Research Coordinator at the Commonwealth of Learning. Today I'll be giving a presentation on data analytics and leadership. I want to explore how data can help us to become stronger leaders, and how we can harness the power of data to make better decisions in our respective institutions.

In recent years we have experienced a data boom. Data is ubiquitous and is being collected and utilised by companies, governments, institutions and individuals across numerous sectors. Businesses collect data on, revenue, profits, and stock price); governments track crime rates, unemployment rates, and literacy rates) and institutions, such as schools or universities, collect data on enrolment, performance and expenditure.

So what is data?

In basic terms, data is a set of values, qualitative or quantitative, for certain variables. This sounds very broad and it is. While data and information are often used interchangeably, we can think of data as the raw facts, figures and numbers – information is when these raw values are organized in a way that makes sense.

Why is data important?

There are many answers to this question, but I'll highlight a few, with some real-world examples

Data helps us to get to where we want to go – literally and metaphorically. It provides us with relevant information about our environment which helps us to plan how we can move forward.

In 1969, in the launch of the first mission to the moon, data, and women, played a huge role. Vast quantities of data were fed into on board and ground navigation systems of Apollo 11, which enabled it to get to the moon and back. When an operational glitch wiped out some of the navigational data while Apollo was landing, it was the code of, Margaret Hamilton, pictured here, that was used to recoup the data, allowing for a successful landing.

Data helps us to predict and react accordingly. Data can be analysed to make predictive models, which can allow us to anticipate and proactively address situations before they arise.

this kind of data modelling is often used to predict election outcomes. However, as we saw in 2016 with the American presidential elections, , the data may not always predict accurately, so we need to be very aware of potential issues with quality and reliability.

Good data helps us to understand and improve

By knowing the current state of something, we are better able to make decisions for improvement.

An example of this from the corporate world is the case of MERCK, a global healthcare company operating in 140 markets worldwide. Merck sought to use data collected in manufacturing and inventory to gain business insights. However, they found that engineers were spending 60 percent to 80 percent of their time searching for the right data.

Merck created MANTIS (Manufacturing and Analytics Intelligence), a large data warehousing and analysis system which allowed non-technical analysts to easily see data in visualization software. MANTIS helped decrease the time and cost of the company's overall portfolio of IT analytics projects by 45 percent. The tangible business outcomes included a 30 percent reduction in average lead time, and a 50 percent reduction in average inventory carrying costs. The leader at the helm of this project was Michelle Alessandro, pictured here.

Good data gives validity to our ideas and decisions

Data helps us to back up our opinions and give weight to the decisions we make, by providing supporting evidence. This evidence can help us to convince others, and garner support for our ideas.

As the quote says: “without data we are just people with opinions”

Something that all these examples have in common is the importance of data for decision-making. Data is not valuable in and of itself. Its value comes in our ability to translate data into information, information into knowledge and knowledge into wisdom, through analysis and insight.

This notion of turning raw data into actionable items is closely linked to the concept of data-driven decision-making, which is becoming increasingly popular, particularly in the education sector.

Data driven decision making (DDDM) is the process by which administrators and teachers collect and analyze data to guide a range of educational decisions

Educational institutions are collecting a vast amount of data – including financial data, staff and student data and data on systems and infrastructure.

This data has the potential to inform decisions on a wide array of crucial areas – for example:

However, much of this data remains underutilized, and in ‘silos’

The question is really, how do we turn data into information, information into knowledge and knowledge into wisdom so that we can take action, and make positive changes? For many institutions, such a process means that there must be a shift in the organizational culture and systems and practices, which requires strong leadership.

In this next section I will provide some lessons learned from the Commonwealth of learning in our organization journey towards data-driven decision-making.

The introduction of result-based management first occurred at COL 15 years ago, and this was an important first step towards creating a culture of data driven decision making. Results based management introduced strongly the concept of accountability. Accountability at COL means that we must show evidence of our impact, and this necessarily implies data collection. After the introduction of RBM, staff was oriented to the new approach, and training materials were developed. Meanwhile, appropriate systems were devised, and reimaged, to store and sort data in an organized way, thereby turning it into

information. This was an iterative process and is still ongoing. While this was a major step, there was still a weakness in turning this information into knowledge and wisdom, which would ultimately help in making decisions about COL's programmes. In 2016, with the support of an external M&E consultant funded by the William and Flora Hewlett foundation we began the design of an e-Logframe system which stored and aggregated data at the corporate level, and included a dash board which would allow us to see progress towards outcomes. We are now exploring data visualization software to further improve our ability to interpret the data and use it for decision-making. Already the approach has allowed us to make course corrections in several initiatives which were found to be facing challenges.

Based on this experience, we have a few key takeaways that any leader can use when trying to encourage a shift towards data-driven decision-making at their institution:

The first is that you need to change attitudes and perceptions about data

There may be some resistance to collecting and analysing data. This may stem from a lack of understanding, a concern about additional workloads, or the fear that data will reveal inadequacies.

It is important to create a win-win situation, where staff know the potential benefits of data and can see how additional effort to collect and analyse data can pay off in terms of improved decision making and ease of reporting. It is also important to have strong leadership in setting the expectations and promoting a data-driven organizational culture. Champions from all walks of staff can facilitate buy-in, by demonstrating the benefits of data analytics at various levels. As the adage goes, nothing succeeds like success, so highlighting cases where data analytics have led to positive, tangible results can also help to win over colleagues.

Supporting data literacy

In COL's experience, capacity building can help to address resistance that stems from a lack of understanding or familiarity. There also needs to be guidance and support within the organisation so that staff do not feel like they are alone in it. Collaboration and knowledge sharing is also key as it can build a sense of trust and community around the area of data, and takes advantage of in house capacity.

It is important to note that not everyone has to be a data expert, but data literacy is key. This means the ability to understand why certain data is necessary and what it will be used for, to differentiate between good data and problematic data sources, to understand basic measurement concepts, to use context and experience to interpret the findings, and finally to know how to communicate findings in a meaningful way to a target audience.

The last point is around systems and tools. While culture and capacity is important, we also need to have the appropriate tools in place to undertake meaningful analysis.

At COL we have begun leveraging different technologies to help us better transform data to wisdom.

As mentioned earlier we have an online e-logframe system for tracking progress towards outcomes

We are also using data visualization packages, such as tableau and power BI which allow for easy, visual interrogation of data, and facilitates decision-making. While we are in the early stages of using Power BI we see that it has great potential for data-driven decision making at COL.

To wrap up this presentation, I'd like to share a few videos with you about how data visualization is being leveraged in the educational context for decision making.

The first video provides an inspiring example from Power BI of a school district in the US, not far from where I am based in Vancouver, Canada and how they have used analytics to make some drastic improvements.

Show video (approx. 4 mins)

The next video is a more technical demo of this kind of system. This one is from Dell, which is a Microsoft Power BI partner.

Show video (approx. 3mins)

I hope that you have found some useful takeaways from this presentation! Thank you kindly for your time and with that I will hand it back to Bala.