

Developing a data literate workforce

A strategy and framework for the enterprise

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Table of Contents

Strengthen data literacy for a competitive edge	3
Who is the audience for this framework?	3
Six steps to a best practices data literacy program	4
Step 1. Planning and Vision	4
Step 2. Communication	5
Step 3. Workforce assessment	5
Step 4. Cultural learning	6
Step 5. Prescriptive learning	6
Step 6. Measurement	6
Take an iterative approach for continuous improvement	7
Workforce assessment: Introducing data literacy personas	8
Data Aristocrat	8
Data Knight	8
Data Dreamer	8
Data Doubter	8
Roadmaps for data literacy learning and empowerment	9
Learning resources for Data Aristocrats	9
Learning resources for Data Knights	10
Learning resources for Data Dreamers	11
Learning resources for Data Doubters	12
Getting started with data literacy	13

Strengthen data literacy for a competitive edge

As the rapid adoption of Business Intelligence indicates, businesses are recognizing the competitive advantages to be gained from mining their data for insights that drive growth.¹

Unfortunately, new research shows only 24% of business decision makers, from junior managers to the C-suite, feel fully confident in their ability to read, work with, analyze and argue with that data—the fundamental skills that define a person's *data literacy*.²

The good news is that the majority (78%) said they would be willing to invest more time and energy into improving their data skillset.

This strategy and framework presents a six-step approach based on best practices for designing, developing and implementing a successful data literacy program across your organization.

The results will be reflected in a sharper competitive edge in every part of your business and a loyal workforce energized and empowered by your investment in their professional development.

Who is the audience for this framework?

This strategy and framework has been designed for adoption of data literacy at the enterprise level. Ideally, data literacy initiatives should start at the level of the Chief Data Officer (CDO), found in the enterprise C-suite (see inset). In their role, the CDO of an organization should be the leader and greatest advocate of the data literacy initiative, ensuring full adoption and buy-in. While data is at the core of their mandate, data literacy needs to be embedded into what they do, as it's often seen as of the major stumbling blocks for successful data programs.

In the absence of a CDO, at least one member from the C-suite should be enlisted as a champion for data literacy in the organization. Whether you are a VP of Analytics, data scientist, business analyst, business user, be sure to utilize the executive level and highest-ranking data and analytics position to help drive this strategy.

What is data literacy?

Data literacy is **the ability to read, work with, analyze and argue with data** regardless of your role, skill level, or the BI tools you use.

Improving data literacy hones your decision-making skills. You learn to ask the right questions of your data, interpret your findings and take informed action.

What is a Chief Data Officer (CDO)?

"...the chief data officer oversees a range of data-related functions that may include data management, ensuring data quality and creating data strategy. He or she may also be responsible for data analytics and business intelligence, the process of drawing valuable insights from data..."

...in a recent report on the new title, Gartner called it a "strategic planning assumption" that 90 percent of large organizations will have a chief data officer by 2019.

Source: Zetlin, Minda, "[What is a chief data officer? A leader who creates business value from data.](#)" CIO, October 25, 2017.

¹ By 2020, revenues from big data and analytics products and services will eclipse \$200 billion. <https://tdwi.org/articles/2017/05/04/big-data-and-analytics-spending-projected-to-soar.aspx>

² The research was conducted by Censuswide on behalf of Qlik between August 2017 – February 2018. The research surveyed 7,377 business decision-makers (junior managers and above) across Europe, Asia and the U.S. For the full report, visit qlik.com/data-literacy-report.

Six steps to a best practices data literacy program

Organizations looking to increase their Return on Investment in data initiatives need to put in place a program that builds data literacy across the workforce along with utilizing data scientists; a data literacy program improves the workforce's ability (and motivation) to read, work with, analyze and argue with data, increasing the success of implementing and rolling out key data initiatives.

Regardless of the size or focus of your business, you can establish and develop a data literacy program by following the steps illustrated in Figure 1. We'll discuss them in the order you would follow when you initially establish your data literacy program, with the understanding that, over time, you will continue to reiterate them for continuous improvement.

Note: an organization's data literacy program and plan will be implemented alongside an organization's data and governance strategies, and should help those plans to succeed.



Figure 1. Steps in building a data literacy program

Step 1. Planning and Vision

The initial step to implementing a strong data literacy program is to have a formal discussion with individuals charged with leading data initiatives and strategies in your organization. As mentioned earlier, this should ideally include the Chief Data Officer (CDO).

The planning and vision phase should resolve three critical issues.

Participants

Organization size is a strong determinant of who in the organization should take part of the initial data literacy program. For smaller organizations, the entire organization can take part in the program. For larger businesses, targeting specific individuals, teams, or departments may be a more useful strategy.

Ensure those you want to enroll and put into place already play a role in data-driven decisions and are good communicators, enthusiastic about working with data. These qualities will help advance the data literacy program throughout the organization. Once a group of individuals is selected to participate in the initial roll-out of the data literacy program, you can bring on other individuals.

Funding

Funding should be approved from the top and as part of budgets for business intelligence, change management or other data initiatives. Alternatively, a new dedicated budget could be proposed for the establishment of a data literacy program.

Using a data literacy program based on the strategy and framework presented in this document helps keep costs low—with online modules available at no charge. The exception is the choice to invest in Instructor Led Training (ILT) and any cost for supplies.

Timeframe

What's the target date for having the data literacy program defined and in place (that is, by when should the six steps outline in this paper be complete)? Discussion, communication and assessment steps are typically completed within 3 months. Cultural learning is started the month following these initial steps, with prescriptive learning following the cultural learning phase. Keep in mind, the participants should not be expected to devote non-working hours to the data literacy program. Their workloads should be adjusted to allow time daily to participate in the program.

Step 2. Communication

The importance of a communication plan for rolling out the program cannot be overstated. Initial communications need to ensure they focus on *why* you are doing a data literacy program rather than jumping into the *how* and *what* should happen. It should not only be clear how the business benefits, certainly, (better insights, greater success), but also how participants themselves will benefit (doing better in their jobs right now as well as professional development for career advancement).

Be certain that the first communication about the program is transparent and organization-wide, not just sent to initial participants. Make it clear that while certain groups will participate in the initial program, other groups will be brought on to participate. This communication should also ensure that those who read it understand that leadership is behind this initiative and it is designed to empower all individuals in the organization to develop the necessary skills to utilize the organization's data effectively.

Once the initial communications are sent and individuals are comfortable knowing what data literacy is and why a data literacy program is being put in place, then the details of *how* and *what* will happen can be communicated.

Utilize your organization's established communication channels to consistently promote the program's progress so the entire organization is aware of what is happening and the efficacy of the program. Continuous communications build excitement and show the employees the data literacy program is not a one-time hit but an ongoing part of the organic growth of the organization.

Step 3. Workforce assessment

Leaders of teams participating in the data literacy program need an objective way of assessing each member's current data literacy comfort level so that the appropriate path for increasing skills can be determined. Simply relying on preconceptions or assumptions about people can be misleading.

There is [an online self-service tool](https://dataliteracy.info/quiz) (dataliteracy.info/quiz) that allows individuals to answer questions about their current comfort level in working with data and data literacy. Teams and individuals should take this quiz in the first 90 days of initiating the data literacy program. Because it is accessible 24/7 at no cost, not only can those actively participating in a data literacy program use it, anyone in the organization who is interested can take it.

Take the quiz

Click [here](https://dataliteracy.info/quiz) to launch our online self-service quiz to find out which persona maps best to your current level of data literacy.

Those who take the quiz will fall into one of 4 different data personas in decreasing level of data literacy: Data Aristocrat, Data Knight, Data Dreamer and Data Doubter. These personas are described in greater depth below in the section on Workforce assessment:

For each persona, there is a prescriptive learning roadmap an individual can follow to further the development of greater data literacy that can be directly applied to doing the current job more effectively—and prepare for the next step in their career.

Step 4. Cultural learning

Establishing a data literacy program should not be presented as a sea change to the way the business works but introduced as a new strategy that will be adopted and woven into the existing culture over time as it proves its value—like most change management. There is cultural learning that all individuals should have access to, beyond those not in the initial program launch.

As part of the cultural evolution to take place, have the organization start to utilize data in meetings, maybe even making it a requirement. Also, look to document where you are utilizing data in your decision-making processes.

Some useful resources you can share across the organization to help everyone understand and begin to embrace a data literate culture are listed here, along with links to access them.

- Online Module: [A Culture of Data Literacy](#)
- Qlik Instructor-Led Learning: [Foundation of Data Analytics](#) which covers cultural learning
- Book: [“Data Fluency: Empowering your Organization with Effective Data Communication”](#)

Step 5. Prescriptive learning

The prescriptive learning roadmaps discussed later in this strategy and framework help start the process of empowerment and upskilling of an individual’s data literacy. The roadmaps have been defined in conjunction with the personas discussed in the previous section based on real-world experience with increasing data literacy in companies worldwide.

“Prescriptive” does not mean “rigid.” These roadmaps offer a “buffet” of resources from which the individual can choose as appropriate to their learning style and available time. The roadmaps help ensure that individuals neither feel “lost” (e.g., asked to absorb concepts which they are unprepared) nor bored (e.g., wasting time on skills they have already mastered).

For a data literacy program to succeed, organizations need to ensure employees are given the chance to learn, with learning time *consistently* worked into their schedules, whether it’s 1 or 4 hours per week. Employees should understand that the organization believes that data literacy is a strong skillset important in the execution of their job. It is vital the employee not feel that they are just having more work added to their plate but are instead being empowered to be more effective and efficient.

Step 6. Measurement

To demonstrate to the organization that the data literacy program is making a difference, periodic measurement and reporting is essential. Part of the initial discussion of the program should include agreement on which metrics will be used for program evaluation (e.g., data usage, number of courses completed, number of certifications awarded), frequency of measurement and a communication plan for celebrating successes. Measurement is performed by the leaders who are a part of the original discussion team as well as those who follow later.

When an organization measures and looks at the progress of its data literacy program, ensure that failure is not seen as failure but as a stepping stone and learning opportunity. Organizations should hold “post-mortem” meetings and analyze the projects themselves: what went right, what went wrong, what can be improved, and so forth.

“Learning”, not “training”

Please note: do not use the word training within communications but utilize the word “learning”.

The word training can have a negative impact in that when an individual receives another email saying “new training” it can leave a feeling of more work and time consumed away from the regular job.

Getting to the “why” in the communication, about empowering and learning, is key.

Take an iterative approach for continuous improvement

As teams (both new and previous participants) cycle through your data literacy program you will continuously repeat the steps we have presented in this strategy and framework. But each iteration should not only advance data literacy at the individual and organization levels; the program itself must continue to adapt to the evolving, data-driven world of work and changes in BI techniques and technologies.

Initiate new discussions on data literacy every 6-12 months, celebrating successes of your own data literacy program and adding the kinds of innovations that may build more value into the program. You may decide to build an introduction to data literacy into your new hire on-boarding, continuing to feed cultural learning at the earliest opportunity. Innovate with new techniques like gamification, celebrating successes, and other ways to ensure a positive feedback loop.

Above all, maintain transparent communications on the data literacy program and broader trends in BI so that the cultural learning we discussed earlier deepens and spreads across the organization, sharpening your competitive edge and keeping the workforce energized, empowered and appreciative.

Workforce assessment: Introducing data literacy personas

We spoke earlier in Step 3 about the importance of objective workforce assessment, enabling an organization to understand where each of its workers currently stands regarding their comfort level with data and data literacy.

In our experience, employees typically fall into one of four types of data literacy personas—from the most highly skilled Data Aristocrat to the least trained, even skeptical, Data Doubter, with Data Knights and Data Dreamers at interim levels of data literacy.

Data Aristocrat

The most data literate employees have advanced skillsets and experience in data analytics—some may even be data scientists. Along with supporting continued learning in storytelling, algorithms and the latest methodologies for data analytics, your business should help Data Aristocrats develop skills in leadership and mentoring. They can serve as evangelists and mentor others in helping to drive data driven insights throughout your organization.

Try the quiz

Click [here](#) to launch our online self-service quiz to find out which persona maps best to your current level of data literacy.

Data Knight

Driven to become more data literate, Data Knights are eager to further their skills in data science, algorithms and statistical analysis. With an eye to progressing to Data Aristocrat, Data Knights are also looking to further their leadership, mentoring and overall business skills, including enhancing storytelling skills to demonstrate the power of data literacy.

Data Dreamer

Data Dreamers are still in the beginning stages of data literacy but have recognized the benefits of working with data in their current roles. They first need foundational learning in data and analysis as well as critical and analytical thinking. They can then build on this foundation with skills in advanced analytical concepts, visualization and storytelling.

Data Doubter

Often skeptical of the value of data-driven decisions and processes in their roles as non-data scientists, Data Doubters need to see the benefits of using data to validate intuition and tribal knowledge on which they typically rely. Awareness training is pre-requisite to overcoming barriers to change. Doubters need to understand they can leverage their existing strengths as they begin foundational work in data literacy—that it is part of their role, not a burdensome add-on. Attention to this persona is critical to preventing roadblocks that can derail a successful roll-out of a data literacy program.

Each of these personas has a different set of requirements to smoothly advance their data literacy learning and empowerment. In the next section, we present individualized roadmaps for skill building with a “buffet” of resources for developing data literacy in each persona to its full potential.

Roadmaps for data literacy learning and empowerment

The charts in this section map the appropriate learning resources to key target skillsets for each persona in developing a higher level of data literacy.

Learning resources for Data Aristocrats

	Desired Outcomes	Learning Resources
Target Skillset		
Leadership	Develop into leadership roles within companies	<ul style="list-style-type: none"> • Book: "Start with Why"
Mentoring	Leadership and mentoring of other employees	<ul style="list-style-type: none"> • Book: "The Mentor's Guide: Facilitating Effective Learning Relationships" • Book: "One Minute Mentoring"
Communication & Charisma	Public speaking Communication across teams	<ul style="list-style-type: none"> • Public speaking course/book • Book: "The Charisma Myth: How Anyone Can Master the Art and Science of Personal Magnetism" • Book: "How to Have Confidence and Power in Dealing with People" • Book: "How to Win Friends and Influence People"
Statistic and analytical skills	Continuous study of statistics and trends in the industry Keep up on predictive modeling, data science, etc.	<ul style="list-style-type: none"> • Podcast: "Data Skeptic" • Website: www.coursera.org • Website: www.datacamp.org • Website: www.udemy.com
Coding	Development of coding skills, such as R, python, etc. Might already have a skill-set built, but need to continuously learn and improve	
Continuous learning on visualization and storytelling	Ensure development of latest tool for building advanced visualizations Advanced storytelling	<ul style="list-style-type: none"> • Qlik Continuous Classroom learning paths: Business Analyst, Data Architect and System Administrator • Book: "The Story Factor: Inspiration, Influence, and Persuasion through the Art of Storytelling" • Book: "Resonate: Present Visual Stories that Transform Audiences"
Other		<ul style="list-style-type: none"> • Blogs: https://blog.qlik.com/jordan-morrow/ • Webinar: "Data Science Central – Bridging the Gap" • Webinar: Forrester – "Using Data Literacy to Guild and Insights-Driven Culture" • Data Analytics Certification

Learning resources for Data Knights

	Desired Outcomes	Learning Resources
Target Skillset		
Mindset	<p>Develop skills within critical and analytical thinking</p> <p>Develop skills within decision literacy</p>	<ul style="list-style-type: none"> Podcast: "Freakonomics" Podcast: More or Less Book: Freakonomics Series (especially "Think like a Freak") Book: "The Demon-Haunted World—Science as a Candle in the Dark"
Leadership	<p>Study of leadership principles and development</p> <p>Learn own weaknesses and develop skills</p>	<ul style="list-style-type: none"> Book: "Start with Why" Book: "Drive: The Surprising Truth about What Motivates Us"
Communication	<p>Learn and develop skills within data vocabulary and fluency</p> <p>Communicate across horizontals and verticals to spread the message of data literacy</p>	<ul style="list-style-type: none"> Public speaking course/book Book: "How to Win Friends and Influence People"
Statistic and analytical skills	<p>Continuous learning of statistics and trends within the industry</p> <p>Keep up on predictive modeling, data science, analytical methodologies, etc.</p>	<ul style="list-style-type: none"> Qlik ILT: Foundation of Data Analytics Podcast: "Data Skeptic" Book: "Naked Statistics" Book: "The Signal and the Noise: Why So Many Predictions Fail – But Some Don't"
Coding	<p>Continuous learning and study of code needed to stay on top of job</p> <p>For beginners, develop and learn coding and beginning statistical languages.</p>	
Continuous learning on visualization and storytelling	<p>Learn skills within data storytelling</p> <p>Develop and acquire skills within visualization building</p>	<ul style="list-style-type: none"> Qlik Continuous Classroom Tracks: Business Analyst, Data Architect and System Administrator Book: "The Story Factor: Inspiration, Influence, and Persuasion through the Art of Storytelling" Book: "Resonate: Present Visual Stories that Transform Audiences"
Other		<ul style="list-style-type: none"> Blogs: https://blog.qlik.com/jordan-morrow/ Webinar: "Data Science Central – Bridging the Gap" Webinar: Forrester – "Using Data Literacy to Guild and Insights-Driven Culture"

Learning resources for Data Dreamers

Target Skillset	Desired Outcomes	Learning Resources
Mindset	Develop skills within crucial and analytical thinking Develop skills within decision literacy	<ul style="list-style-type: none"> • Video: Decision Intelligence with Cassie Kozyrkov • Book: "The Demon-Haunted World—Science as a Candle in the Dark"
Leadership	Study of leadership principles and development Learn own weaknesses and develop skills	<ul style="list-style-type: none"> • Book: "First, Break All the Rules" • Book: "How to Win Friends and Influence People" • Book: "Drive"
Communication	Learn and develop beginning skills within data vocabulary and fluency Develop the ability to communicate plans and thoughts regarding data	<ul style="list-style-type: none"> • Public speaking course/book • Book: "How to Win Friends and Influence People"
Statistic and analytical skills	Begin study of statistics and analytical concepts and trends Study basic knowledge and understanding of analytics	<ul style="list-style-type: none"> • Qlik ILT: Foundation of Data Analytics • Podcast: "Data Skeptic" • Book: "Naked Statistics" • Book: "The Signal and the Noise: Why So Many Predictions Fail – But Some Don't"
Coding	Develop beginner skills and understanding with regard to coding	
Continuous learning on visualization and storytelling	Develop beginning skills in visualization building Learn basic charts and their purposes	<ul style="list-style-type: none"> • Qlik Continuous Classroom Tracks: Business Analyst, Data Architect and System Administrator • Book: "The Story Factor: Inspiration, Influence, and Persuasion through the Art of Storytelling" • Book: "Resonate: Present Visual Stories that Transform Audiences"
Other		<ul style="list-style-type: none"> • Blogs: https://blog.qlik.com/jordan-morrow/ • Webinar: "Data Science Central – Bridging the Gap" • Webinar: Forrester – "Using Data Literacy to Guild and Insights-Driven Culture"

Learning resources for Data Doubters

	Desired Outcomes	Learning Resources
Target Skillset		
Mindset	<p>Overcome the mindset of “gut feel” or “we’ve always done it this way” and utilize critical and analytical skills</p> <p>Develop skills within critical and analytical thinking</p> <p>Develop skills within decision literacy</p>	<ul style="list-style-type: none"> Podcast: “Freakonomics” Podcast: “More or Less” Book: Freakonomics Series (especially “Think like a Freak”) Book: “The Demon-Haunted World—Science as a Candle in the Dark”
Leadership	<p>Learn and start to develop strong leadership skills, or continue to build off the skills already developed here</p>	<ul style="list-style-type: none"> Book: “First, Break All the Rules” Book: “How to Win Friends and Influence People” Book: “Drive”
Communication	<p>Develop the ability to properly communicate fears and holdups with data, but being willing to listen actively</p> <p>Learn and develop beginning skills within data vocabulary and fluency</p>	<ul style="list-style-type: none"> Book: “How to Win Friends and Influence People”
Statistic and analytical skills	<p>Start to learn and develop very basic understandings of statistic and analytical skills and their use/need in business</p> <p>Begin study of statistics and analytical concepts and trends</p> <p>Study basic knowledge and understanding of analytics</p>	<ul style="list-style-type: none"> Qlik ILT: Foundation of Data Analytics Podcast: “Data Skeptic” Book: Naked Statistics Book: “The Signal and the Noise: Why So Many Predictions Fail – But Some Don’t”
Coding	<p>Develop beginner skills and understanding with regard to coding</p>	
Continuous learning on visualization and storytelling	<p>Develop beginning skills in visualization building</p> <p>Learn basic charts and their purposes</p>	<ul style="list-style-type: none"> Qlik Continuous Classroom Tracks: Business Analyst, Data Architect and System Administrator Book: “The Story Factor: Inspiration, Influence, and Persuasion through the Art of Storytelling” Book: “Resonate: Present Visual Stories that Transform Audiences”
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Getting started with data literacy

Qlik is helping individuals and organizations through a new education program which brings value across entire ecosystems and industries.

You do not need to be a Qlik customer to benefit, nor do you need to purchase any products from Qlik. With the exception of some instructor-led learning, program offerings are offered without charge.

The new program is designed to empower everyone with the ability to understand, analyze and use data with confidence, as well as help foster a culture of data literacy inside organizations. The learning is product agnostic – built around widely adopted data, analytics and statistical concepts that can be used in any context and with any BI tool.

Preparing students to enter today's workforce?

A recent study showed that a mere 21% of 16-24-year-olds are data literate.

The Qlik Academic Program provides students, professors and researchers at both nonprofit and non-for-profit accredited universities with free Qlik software and learning resources, including resources on data analytics and data literacy. It also includes free access to the Qlik Continuous Classroom



For more information and to get started, visit qlik.com/getdataliterate.



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