

D/NATIVES: The future of your business

How to close the data literacy gap to power the future world of work



Exasol

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What do we really mean when we talk about “data”?



Foreword written by
Adah Parris, futurist
and cultural strategist

The etymology of the word data goes back to the 1640s and means “a fact given or granted”. Therefore, if data is about “facts” then data literacy is about the ability to recognize, interpret and communicate the insights that those facts reveal.

Data literacy is what enables us to make sense of the world around us, to get a snapshot of the who, what, where, when and how of our past and our present so that we can predict, design and be the architects of our future.

“Data literacy is about more than number crunching, it’s about being a storyteller. A narrator.”

Adah Parris

This research report conducted by Exasol reveals that only 43% of respondents (16-21 year olds across UK, US and Germany) consider themselves to be data literate and 54% are either not that familiar or not at all familiar with the term ‘data literacy’.

But does this represent a case of miscommunication and misinterpretation of the term, rather than ignorance or miseducation?

"Narratives are major vectors of rapid change in culture, in zeitgeist, and in economic behavior."

Robert J. Shiller, Nobel Prize-winning economist and author of Narrative Economics.



What do, and could, some of the insights in this report mean for those responsible for nurturing talent and educating our future data analysts? How could this change the way that students, educators, analysts and business leaders see the world, our place in it, our impact on it and our responsibility to it, especially in the context of understanding our relationship with data?

One place to start is by the recognition that as we create data, the data creates us. It is a non-linear process of inter and intra-connected storytelling. Who better to become the narrators of the future than those digital natives (labelled D/NATIVES in this report) who are adept at using digital technologies and social media to share the facts (and sometimes fiction) of their

lives? Maybe then the role of the educator of the future is not to merely pass on facts (data) and figures but to help D/NATIVES recognize the interconnectedness and transferability of skills within and across every aspect of their lives. That the same ethics, morals and levels of consent that they use in everyday life are not only applicable but crucial to the sustainability of our lives, our stories, our cultures, our societies and our economies.

If the COVID-19 pandemic has taught us anything, it is that there is great power and responsibility in the production, manipulation and interpretation of data. D/NATIVES already recognize the potential of data not only in their personal lives and their future careers, but also for how we all interact and do business

in the world, now and in the future. It is vital that business leaders and educators similarly recognize the opportunities and responsibilities that working with data brings - it starts by understanding the insights shared in this report.

"D/NATIVES already recognize the potential of data not only in their personal lives and their future careers, but also for how we all interact and do business in the world..."

The rise of the D/NATIVE

We've entered a golden era of data. Every email we send, every digital interaction we make, every product we buy – and often even every journey we make – are all tracked. The resulting data can be incredibly powerful, and this isn't going unnoticed.

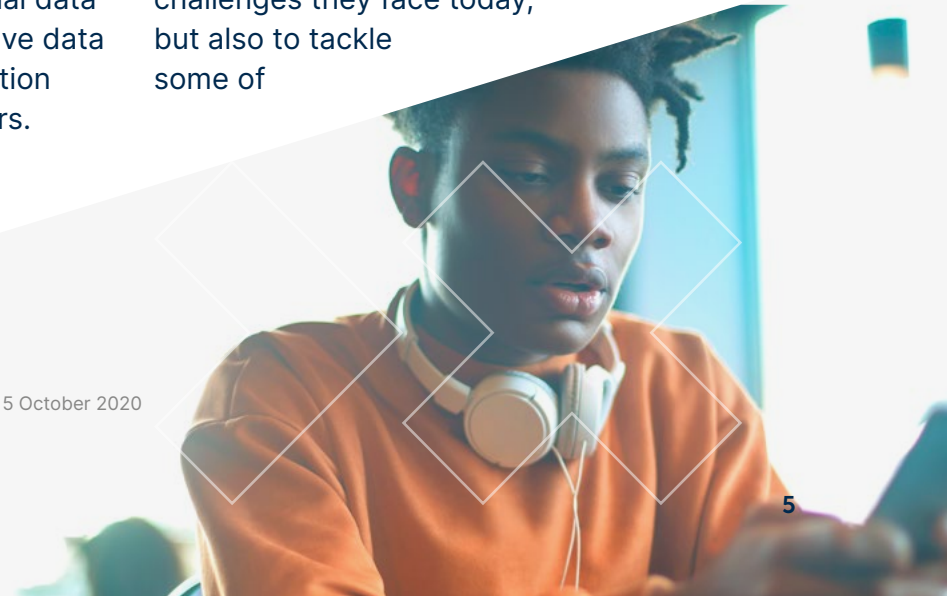
According to Gartner¹, "by 2022, 90% of corporate strategies will explicitly mention information as a critical enterprise asset and analytics as an essential competency." And "by 2023, data literacy will become an explicit and necessary driver of business value, demonstrated by its formal inclusion in over 80% of data and analytics strategies and change management programs."

In theory, this should be a huge opportunity for today's young people who are in higher education or just entering the world of work. These 'D/NATIVES', as we've coined them, are often lauded for their technical skills – they have grown up with technology all around them and are incredibly comfortable using mobile devices, social media, and even technology that maps their daily lives such as fitness trackers.

Since this segment of the population can often navigate new software far better than older generations, it wouldn't be a stretch to assume that D/NATIVES should have the subconscious and habitual data literacy skills necessary for effective data analysis, storytelling and visualization of key trends, patterns, and outliers. That they are best placed to spur a revolution in the way we use data to

transform business and improve our daily lives. That they are the future data champions who will not only use analytics to help businesses solve the data challenges they face today, but also to tackle some of

¹ Gartner "10 Ways CDOs Can Succeed in Forging a Data-Driven Organization" Mike Rollings, Alan D. Duncan, Valerie Logan, 15 October 2020



The rise of the D/NATIVE

humanity's biggest challenges such as space exploration, pollution and climate change.

But is any of this really true? Are D/NATIVES as data literate as employers expect them to be? Has the education system equipped today's young people with the data skills that are necessary – and can be honed – in our new world of work? Or are there shortcomings that are inhibiting success? In the pages that

follow we ask these important questions, and explore what work needs to be done to empower D/NATIVES to realize their potential. This is all backed up by the findings from our recent survey of over 3,000 16-21 year olds in the UK, US and Germany, as well as our in-depth qualitative research that involved online discussions with three groups of 18-25 year olds studying data-related courses.

Read on to uncover the truth about D/NATIVES' data literacy, and to find out what needs to be done to close the data literacy gap and to power the future world of work.

We surveyed over 3,000 16-21 year olds in the UK, US and Germany.

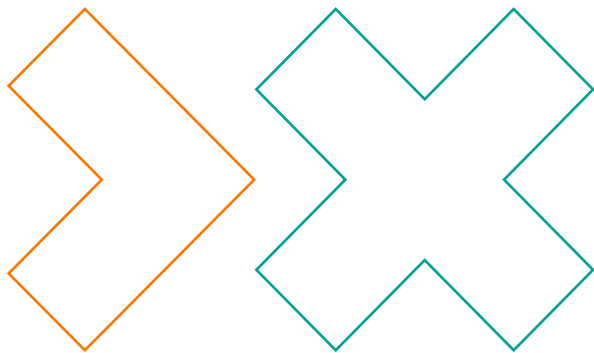


The truth about D/NATIVES' data literacy

Defined by MIT as “the ability to read, work with, analyze, and argue with data,” data literacy is now widely considered an essential skill. Without it, organizations can’t succeed in today’s increasingly digital world, and they certainly can’t become data-driven.

“A digital business is a data-driven business whose success depends on all employees being information workers who can “speak data.”² Alan D. Duncan, Gartner analyst.

Duncan continues, “Data and analytics leaders, including chief data officers, must become change agents focused on the transformational impacts of data-driven culture and data literacy.”



The good news is that the majority of today’s D/NATIVES recognize the importance of data literacy. According to our research, just over three quarters (76%) of young people believe data and statistics have an impact on their life, with over a fifth (23%) saying they have a significant impact.

What’s more, over half (55%) of D/NATIVES agree or strongly agree that their ability to understand data will be as vital to their future as their ability to read and write.



76% of young people believe data and statistics have an impact on their life.



23% of young people believe data and statistics have a significant impact on their life.

² Gartner “Roadmap for Data Literacy and Data-Driven Business Transformation: A Gartner Trend Insight Report” Alan D. Duncan, 5 October 2020

The truth about D/NATIVES' data literacy

D/NATIVE spotlight

David (22). Economics student in the US.

"I think that people like to use data a lot more now to get ideas across that you couldn't get across previously, where we have all these capabilities with computers and data. And so I would imagine that these younger kids are seeing that, and are thinking 'Oh, I need to be able to do that', in the same way that everyone needs to know how to do some type of computer programming, I think of that as sort of interchangeable with understanding or analyzing data."

But there's a catch – and a big one at that. Despite understanding how crucial data literacy is, just 43% of respondents consider themselves to be data literate.

Equally as concerning is that 54% of respondents to our survey say they are either not that familiar, or not at all familiar with the term 'data literacy'. While this could suggest a significant skills shortage, it could also mean that today's young people are simply not conversant with business terminology around data. Either way, it suggests there's still progress to be made.



43%

of respondents consider themselves to be data literate



54%

say they are either not that familiar, or not at all familiar with the term 'data literacy'.



A matter of education?

Overall, while the respondents to our survey do recognize themselves as digital natives, having grown up entirely with the internet and ubiquitous mobile devices, our research has found that they don't feel equipped to apply their subconscious and habitual data literacy skills to the real world.

The 16-21 year olds we spoke to told us that they see a big difference between being able to naturally use and apply technology and applications, and being able to specifically design or work with the underlying data in the real world.

While four out of five (78%) respondents believe data is important in education and work, just 52% feel their education has given them the confidence and skills to use data. That means nearly half don't.



78% of respondents believe data is important in education and work.



52% feel their education has given them the confidence and skills to use data.

D/NATIVE spotlight

Tugce (20). Information Management student in Germany.

"It's a golden medium, we bring 50% theoretical knowledge, but we're lacking 50% practical application, which we have to learn on the job."



A matter of education?

D/NATIVE spotlight

Zac (21). Engineering student in the UK.

"[COVID-19] briefings used to be on every evening or every week, I would watch them and be so overwhelmed by all these different graphs that they were showing. I'm in an environment where I'm used to seeing graphs and data, and I found that very overwhelming, so I can't imagine how somebody who's not used to that would have felt."

Recognizing the need for change

Against a backdrop of current world events, young people recognize that the education system needs to teach them not only how to understand data, but also how to communicate it.

This raises new questions for educational bodies, businesses and society as a whole, with regards to how we educate people and young people in particular, around data. **In fact, the majority of young people we surveyed (55%) think data skills should be more prominent in their education.**

However, despite recognizing this, there is an awareness that those entering the education system today are being taught more technical skills such as coding. This holds greater promise for the future.

D/NATIVE spotlight

Anisa (19). Math student in the UK.

"When I was at school, and doing ICT lessons, we would only ever be taught how to touch type... As I progressed, I noticed that younger years were being taught how to code and there were programming clubs at school. So I...did see a very big change in the syllabus. Pupils are now being taught more key skills relating to data."



55% of young people surveyed think data skills should be more prominent in their education.

We need to build a bridge to business

Today's business leaders want their employees to be able to interpret and make sense of data – and to take action based on insights. However, looking at some of our findings, it seems that D/NATIVES may fall short of employers' expectations – and at a critical time.

Already, many employees really struggle to effectively manage and act upon their organization's data. Research from Accenture found that only 32% of business executives are able to create measurable value from data, while just 27% said their data and analytics projects produce actionable insights.

However, delve a little deeper, and it's clear that D/NATIVES do actually possess many of the skills, traits and aspirations that will not only help them on their way to becoming data literate, but that will serve their future employers well.



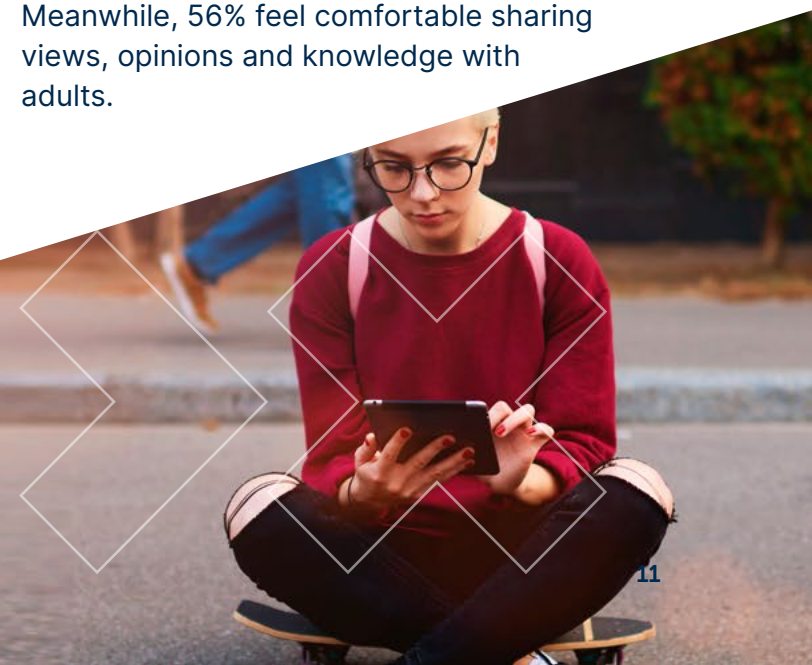
32% of business executives are able to create measurable value from data



27% said their data and analytics projects produce actionable insights

According to our research, almost half (49%) of respondents see working with data as playing a major role in their future career.

Meanwhile, 56% feel comfortable sharing views, opinions and knowledge with adults.



We need to build a bridge to business

D/NATIVE spotlight

Amanda (18). Studying Business in the US.

"I just don't feel like we were taught about what a job in data really involves unless that's what you're majoring in. So I wouldn't really know, at 15 years old, what it was. I think I would just assume for myself it's just counting numbers and something like that, it'd be boring."

While being in charge, leading a team and making decisions are not key drivers for the young people that we questioned, the vast majority (65%) made it clear that they want to learn new skills and gain new experiences – a driver that was, in fact, ranked higher than earning a lot of money. Most respondents (65%) also said it was

important that the work they do is actually making a difference, to wider society, while 61% wanted to make a difference to their employer.

This suggests that D/NATIVES might bring a change in attitude and mindset – and this is something that business leaders should be prepared to embrace if they want to get the most from their workforce.

It's time to open the door to data-related careers

While many of the young people we spoke to are aware that data is likely to play an increasingly important role in their future employment, it seems that there's more work to be done when it comes to 'selling' data-related careers. In fact, the young people we spoke to have had little exposure to concrete examples of data careers.

D/NATIVE spotlight

Liora (21). Biotech student in the US.

"You go through the whole process of designing a product or pharmaceutical drug and, while that's really hard work, it's seeing how it positively impacts people's lives that makes it worth it. Like seeing the positive impact of going through all this data to figure out how to tackle COVID-19 – the end result is about far more than 100 Excel files with boring data. It's important to see what you can actually do with that."

This suggests that employers are missing a trick when it comes to engaging young people in data careers. **Data needs to be brought to life to make it more appealing.**

Tackling the gender divide

Data science, like most science, technology, engineering and math (STEM) fields, has an ongoing gender diversity problem. BCG reports that a significant share of STEM women across the globe do not feel they have a good understanding of what a “data science career” is and what the day-to-day life of a data scientist in the workplace entails.

D/NATIVE spotlight

Yasmine (19). Computer Science student in the US.

“Right now, I like how they’re pushing for more women in engineering and women in science and how they’re targeting girls at young ages. Branching out into doing those programs and taking those classes were really beneficial for me, and they’re really paying off now. So I think they should do more things like that in the future.”

The negative perception and lack of transparency combine to boost the gender gap: the BCG study reports that as few as 15% of data scientists today are women, and that this is a very real constraint on talent.

Our research adds weight to this. Whether it is actually the case or not, **just 19% of young females strongly agreed that they are capable of working with data, compared to 26% of young males.**

Meanwhile, more than half (55%) of males see working with data as forming a major part of their career, compared with just 48% of females.

As few as 15% of data scientists today are women.



Data literacy in disguise

Our research has uncovered that young people's perception of data is quite blurry. It seems that the term is not universally understood, with many respondents focusing on different angles when asked what 'data' means.

While the young people we spoke to consider themselves as competent users of digital services, even students in data-related university courses do not think of themselves as heavily involved in data – they see themselves as dealing with math, statistics, programming, or coding instead.

What's more, many of the young people we spoke to had little understanding of just how much data plays a part in their everyday lives. For example, only half (50%) of respondents say they regularly experience streaming services such as Netflix or Disney+ suggesting shows they might like based on what they've watched before.

This suggests a shortfall in young people's awareness of how data might be applied in a practical sense. However, this doesn't automatically mean that

they lack data-related skills. In fact, our research reveals quite the opposite.

Uncovering the truth

While we've already seen that just 43% of respondents to our survey consider themselves to be data literate, what's interesting is that a higher proportion (55%) agree or strongly agree that they have the ability to read, work with, analyze and argue with data and statistics – the required skills for data literacy according to MIT's definition.

What's more, many of the 16-21 year olds we spoke to believe they have the soft skills that are crucial in helping

organizations realize the full value of their data. **For example, almost three in five (59%) respondents feel skilled in problem solving, the majority (63%) feel skilled in finding information, and over half feel skilled in asking questions and presenting an argument. Meanwhile, the majority of respondents said they felt excited, confident or comfortable about the prospect of doing data-related tasks.**



Data literacy in disguise

A responsible mindset

Our research also reveals that most young people have a good sense of responsibility when it comes to their own data – a trait that should benefit employers at a time of increasing regulation and data governance. **The majority (60%) of respondents to our survey say they have an interest in protecting their personal data and 53% say they are concerned about data privacy. Over two fifths (44%) of respondents say they take the time to research companies and read terms and conditions to ensure they are clear on when data is being shared.**

Our discussions with young people also illustrate that they understand how data protection and privacy translate to business.

D/NATIVE spotlight

Luca (21). Economics student in Germany.

“Data protection is the first thing that comes to mind – it’s so prevalent...you have to be sensitive. You even tell kids how to deal with data and who to give it to.”

However, they also understand the usefulness of data, and why big businesses collect data on a mass scale.

Ultimately, it seems young people are just not aware of how much data they actively interpret and use in their everyday lives. While they say they’re not literate, our research suggests they actually are. This holds promise for employers.



The majority (60%) of respondents to our survey say they have an interest in protecting their personal data.



53% say they are concerned about data privacy.

D/NATIVE spotlight

Dominique (19). Computer Science student UK.

“...Google collects lots of data from people and uses it to create ads on social media. This large collections of people’s information is sold to companies and used to generate more money.”

The path from D/NATIVE to data dreamer

Overall, it's clear that D/NATIVES have a huge amount to offer their future employers – both in terms of the key attributes that result in data literacy, as well as their sense of ambition and enthusiasm for learning.

However, there's still a great deal of work to be done to get everyone on the same page. While approximately half of the 16-21 year olds we surveyed show a reasonable degree of confidence working with data – and actually enjoy the process – the truth is that half are still lacking in this area, especially females.

Bridging the gap, then, is imperative for business leaders if they want to succeed in an increasingly data-led economy. Here's what you can do today to make that happen:

1. Engage with educators

By linking up with local schools, colleges and universities you can initiate programs to encourage data literacy from an early age. Consider joining (or even establishing) a community which aims to place data literacy into the curriculum.

2. Seek advice from thought leaders

Analysts including Gartner, McKinsey and Forrester have a huge body of resources including assessment tool-kits which you can use to help analyze your cultural readiness and support best practice across your organization. Role models are also important. As a role model for your industry, be active and visible so that you can inspire those around you.

3. Embrace the idea of continuous development

Today's D/NATIVES are hungry to learn and want to keep their skills sharp. Embrace this challenge and foster a culture of continuous development where people are encouraged to learn and gain skills. This means providing the necessary structured and prescriptive training that will help young people to treat the data correctly and consistently during their analyses.

Want to hear more on the topic?

Get the latest thinking from industry experts, business leaders and the next generation of the workforce on www.thedatadreamer.com

Dig deeper behind the story with Exasol

Keep up to date with our latest insights at exasol.com/resources

About Exasol

The Exasol high-performance analytics database is built to run faster than any other database, delivering next-level performance, scale and ease of use. Analyze billions of rows in seconds; run high-performance analytics securely in the cloud or on-premises; deliver frictionless analytics with self-indexing that automatically tunes performance; and scale out analytics for one transparent price.

To learn more about Exasol,
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