Building a Data Literacy Training Module at UNT

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2019 Institutional Awardee

CIO100 AWARDS

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What Was Our Big Idea?

UNT needed to advance our user community's understanding of the data they work with each day.

UNT understood a relationship exists between a campus user's data knowledge, skills, and abilities and their ability to fully realize the value of analytics for decision making.

Our 1,200+ trained users brought with them a wide range of data competencies that made normalizing training more challenging.

As data consumption expanded on campus through our self-service analytics, we heard users were feeling overwhelmed with all the information.

The State of Texas passed a bill (SB 475) that requires a broader focus on data literacy and appropriate personal responsibilities for usage.

Fundamentally Shift Conversations About Data Literacy on Campus

MOST HIGHER ED PRACTITIONERS…

- Refer to data as reports
- Don’t typically question historic approaches to analysis (it’s worked for us this long)
- Are more comfortable looking at data that reflects a known and certain ”past”
- Look for averages and frequencies as the primary unit of measurement to make decisions
- Believe that it will take too long /be too hard to learn new approaches
- Cannot always fully articulate a deliberate approach to data-informed decision making
- Wish they could just know the basics of more advanced analysis opportunities

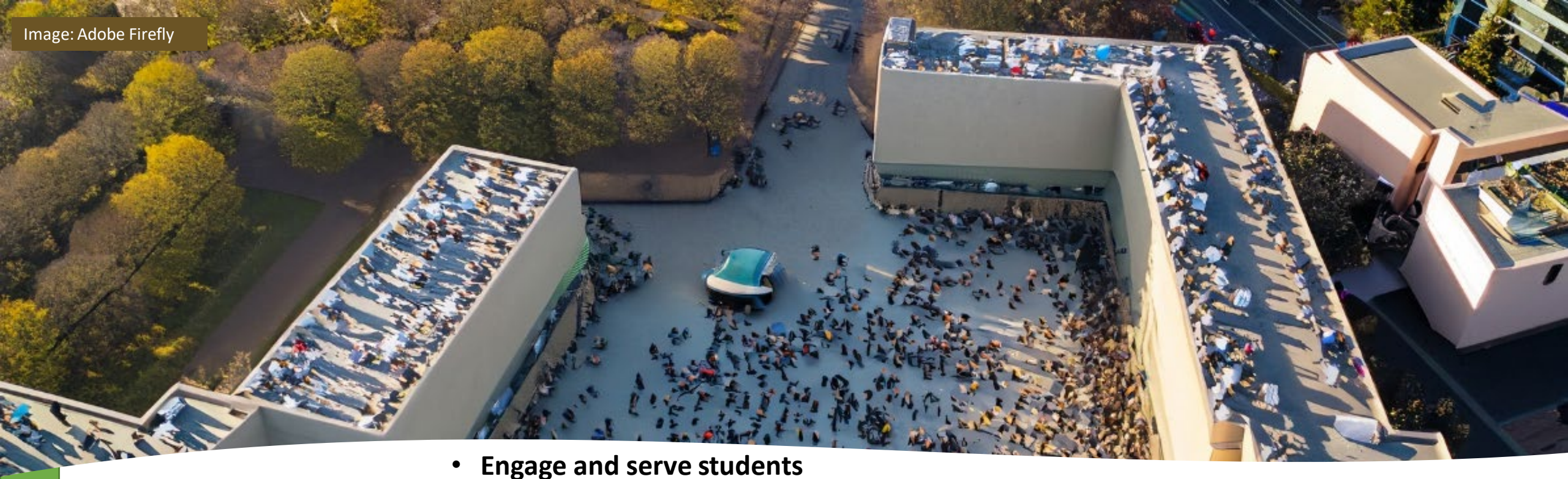


Image: Adobe Firefly

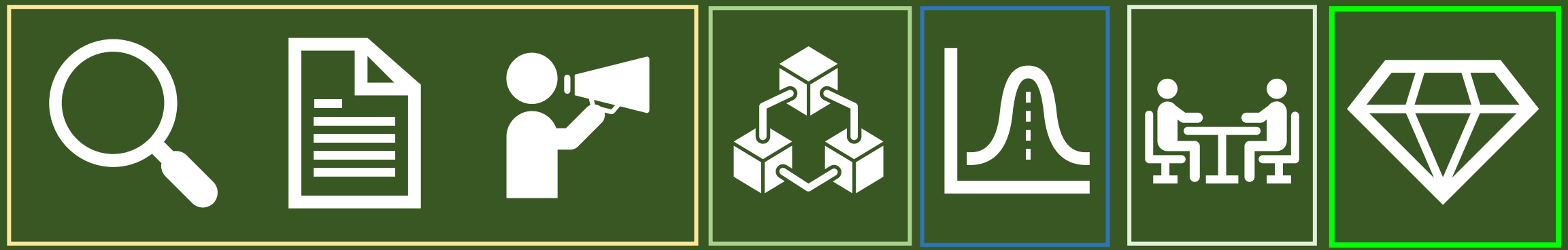
Our Campus Communities are Trained to:

- Engage and serve students
- Teach, grade, and guide conversations
- Learn the necessary tasks of our roles
- Learn the policies and procedures of our institution
- Understand and follow State and Federal laws/standards
- Be better managers, supervisors, and leaders
- Navigate campus student information systems and other workspaces’
- Yet when it comes to data related to these roles or campus, our colleagues are often ill-equipped and lacking

WHAT IS UNT'S DEFINITION OF DATA LITERACY?

noun: talent, skill, or proficiency in a particular area.

"the ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied, and the ability to describe the use case, application and resulting value."
Gartner, 2021



Source: https://www.gartner.com/smarterwithgartner/a-data-and-analytics-leaders-guide-to-data-literacy

How Did We Bridge The Gap Between Aspiration and Implementation?

So What Did We Do?

1. Deployed a live training via zoom to test concepts. While this worked it was very time intensive.
2. Knew we wanted to transition to formalized employee development ecosystem.
3. BI Analyst, Director of Data Management, and AVP collaborated on course design and content
4. Met with Digital Strategy team and HR training team to develop a plan.
5. Course brought into UNT Bridge training system (3rd party software managed by the Office of Compliance)
6. Course edited in several rounds. Videos taken for major sections.
7. Course transformed for accessibility purposes
8. Total time investment: 80 hours
9. Total learner time in seat: 20-25 minutes
10. Learner reporting and role-based access availability
11. Work beginning on part 2. Focusing on analysis techniques and storytelling with data.

LEARN

Learning

Journeys

MY LEARNING | LEARNING LIBRARY | TRAINING CALENDAR | MY APPROVALS

DAIR

DATA LITERACY AT UNT

Explore the fundamentals of data literacy in this introductory course. Learn to ask impactful questions t...

COURSE / 45 MINS | SHARE

MORE INFORMATION ON THE COURSE

DATA LITERACY AT UNT

100% complete

REVIEW

VIEW CERTIFICATE

Course / 45 mins

Explore the fundamentals of data literacy in this introductory course. Learn to ask impactful questions that drive data-driven decision-making. Designed to enhance data skills for UNT employees.

SHARE

TAGS

DAIR | Data | Data Lit | Data Literacy | Data Literacy at UNT | Fundamentals of Data Literacy | UNT Data Literacy

Explore the fundamentals of data literacy in this introductory course. Learn to ask impactful questions that drive data-driven decision-making. Designed to enhance data skills for UNT employees.

- Learning Objectives
- Why Data Literacy at UNT?
- Why is Data Literacy Important?
- What is Data and Data Literacy?
- Knowledge Check

- Demystifying Data Down to it's Core
- The Importance of Data Quality
- Vocabulary
- Undertanding our UNT Data Constructs
- Knowledge Check
- Asking The Best UNT Question Possible
- Now That Your Data Literacy Journey Has Begun
- Additional Resources
- References
- Conclusion

DATA LITERACY AT UNT

0% COMPLETE

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Lesson 1 of 15

Learning Objectives

Welcome

By the end of this module, you will be able to:

- Define Data Literacy
- Understand how your role in the university uses data
- Discover the benefits of a data driven culture
- Apply established practices to everyday decisions and actions
- Learn where to find additional resources for help

WHY DATA LITERACY AT UNT?

DATA LITERACY AT UNT

7% COMPLETE

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Lesson 2 of 15

Why Data Literacy at UNT?

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Data at UNT is everywhere:

- Data are everywhere and all around us. For our students we collect what courses they register for, how they pay their bills, where they choose to live on campus, how they perform on academic assignments, whether they return to UNT, and whether they graduate or not (and a universe of other elements too).
- We also know that we have data on our faculty and staff. Our roles, our job codes, our tenure status and numerous biodemographic attributes that make us who we are.
- We also have a tremendous diversity of data too. Finance, Fundraising, Space, Compliance, and Research are just some of the many typologies.
- We also have data by entity type, such as school, college, and institutional data. These data even extend to include other state institutions and federally reported information.

All of us are part of our UNT data ecosystem, and all of us contribute to its success or challenge. This short series of trainings is designed to give you the basic tools you need to succeed with data at UNT and to ensure all faculty and staff understand the critical role we all play in this ecosystem.

Toward the end of this first module, we will share with you the websites you need to be a successful data user. First, we would like to get us all on the same page about understanding the concepts of data literacy and what it means to be an effective data user

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Man with a notebook in front of a laptop

WHY IS DATA LITERACY IMPORTANT?

DATA LITERACY AT UNT

13% COMPLETE

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Lesson 3 of 15

Why is Data Literacy Important?

With the growing importance of data and analytics strategies in the digital business landscape, possessing data literacy skills has become crucial. This involves having the ability to comprehend and discuss data effectively with others to facilitate the smooth adoption of new and existing technologies within our institution.

Forrester (a major technology consulting company) conducted a study on the keys to better decisions and greater productivity in data-driven organizations. Forrester found that organizations who invest in data literacy get, in return, improved customer and employee experiences, better decision-making processes, better-defined paths to innovation, and other tangible benefits. According to Forrester, "The problem is not data availability or tools but the lack of skills to use the tools and the data to drive business." Click the icons below for a few key findings:

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Nearly 80% of employees say they are more likely to stay at a company that sufficiently trains for the data skills they need.

Only 47% of employees say they have been offered data training by their organization

82% of the decision makers say that they expect at least a basic data literacy from **all employees in their department**.

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Source: Forrester (2022) Budling Data Literacy

Due to the significance and prevalence of data, UNT aims to ensure that its faculty and staff have the data skills they're expected to have. Suffice to say, everyone needs to care about data literacy.

Complete the content above before moving on.

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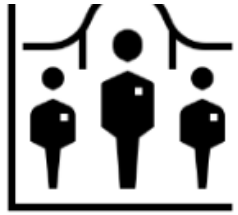

Only 40% of employees say their organization has provided the data skills they are expected to have.

Source: Forrester (2022) Budling Data Literacy

Due to the significance and prevalence of data, UNT aims to ensure that its faculty and staff have the data skills they're expected to have. Suffice to say, everyone needs to care about data literacy.

WHAT IS DATA AND DATA LITERACY?

DATA LITERACY AT UNT

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What is Data and Data Literacy?

According to Merriam-Webster, data is defined as: 1. factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation, 2.information in digital form that can be transmitted or processed, 3.information output by a sensing device or organ that includes both useful and irrelevant or redundant information and must be processed to be meaningful. Practically speaking data is made up of various attributes.

Gartner Inc. is a leading information technology research and consulting company. They define data literacy as "the ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied, and the ability to describe the use case, application and resulting value" in an organization.

Gartner, 2021

UNT utilizes the Gartner approach to data literacy and simplifies this definition down to 3 key elements: teaching you how to explore, understand, and communicate effectively with data. Here at the University of North Texas, data literacy is one of the most critical skills to help us succeed in our decision-making processes.

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Why should we all care about Data Literacy?

1. Helps you make better decisions
2. Increased ability to compete in a highly competitive marketplace
3. More efficient use of your time and existing resources
4. Reduces your chances of inappropriate conclusion & protects your reputation
5. Increased ability for you to spot important trends and act to make an impact
6. Increasingly important employee skill and required for advancement
7. Better perspective of what constituents need from you

KNOWLEDGE CHECK

Question

01/02

What are some reasons you should care about data literacy at UNT? Select all that apply.

- [ ] More efficient use of your time and existing resources
- [ ] Increasingly important employee skill required for your advancement
- [ ] Helps you make better decisions
- [ ] Decreased ability to compete in a highly competitive marketplace

SUBMIT

Question

01/02

What are some reasons you should care about data literacy at UNT? Select all that apply.

- [x] More efficient use of your time and existing resources
- [x] Increasingly important employee skill required for your advancement
- [x] Helps you make better decisions
- [x] Decreased ability to compete in a highly competitive marketplace

Correct

NEXT

Question

02/02

UNT utilizes a framework of data literacy adopted from Gartner. This approach to data literacy is best defined as which of the following:

- ○ Data literacy is an ability to explore, understand, and communicate with data. It includes critical thinking skills to use, interpret, and make decisions with data, then convey its significance and value to others.
- ○ Data literacy is exploring, understanding, and communicating effectively with data.
- ○ The ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytics, methods and techniques applied, and the ability to describe the use case, application and resulting value.

SUBMIT

Question

02/02

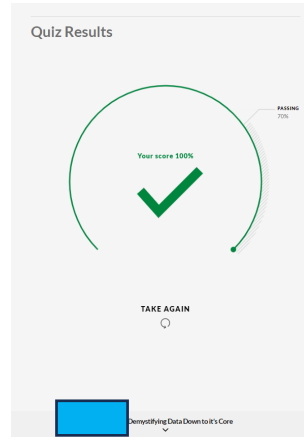
UNT utilizes a framework of data literacy adopted from Gartner. This approach to data literacy is best defined as which of the following:

- ⊗ Data literacy is an ability to explore, understand, and communicate with data. It includes critical thinking skills to use, interpret, and make decisions with data, then convey its significance and value to others.
- ⊗ Data literacy is exploring, understanding, and communicating effectively with data.
- ✓ The ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytics, methods and techniques applied, and the ability to describe the use case, application and resulting value.

✓

Correct

NEXT



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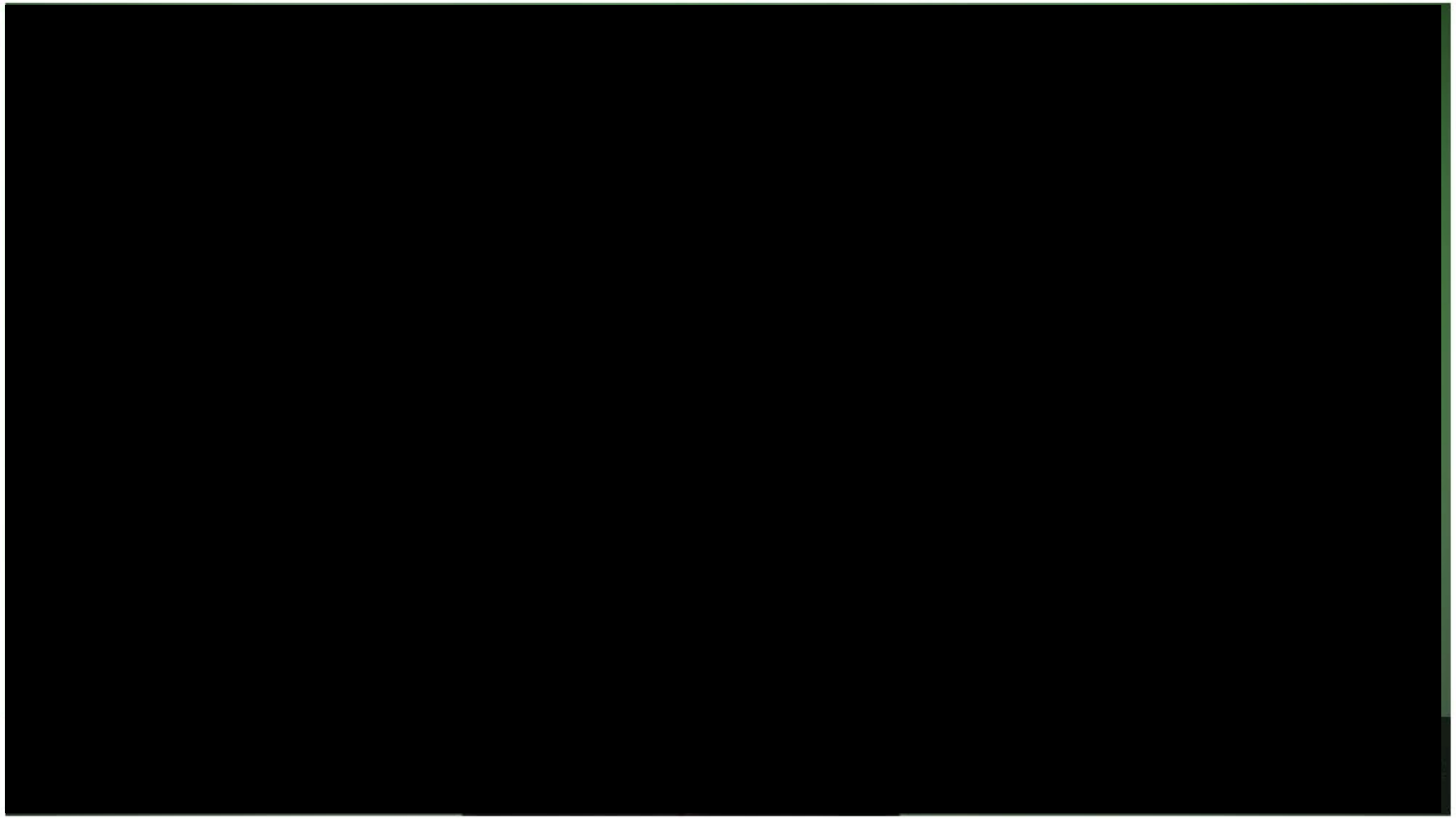
Lesson 6 of 15

Demystifying Data Down to it's Core



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The following framework will help you understand the six most important attributes of data; **volume, velocity, variety, validity, vulnerability** and **value**. This framework is commonly known as the **6 V's of data**. These attributes become especially important when assessing how to frame a question needing data.

The Six V's of Data at UNT

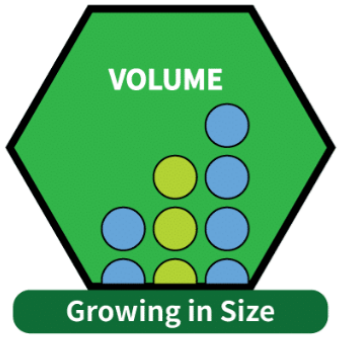
- VOLUME +
- VELOCITY +
- VARIETY +
- VALIDITY +
- VULNERABILITY +
- VALUE +

The Six V's of Data at UNT

VOLUME

Growing in size

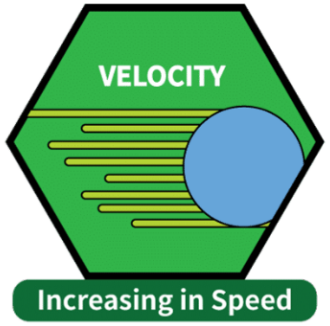
UNT sees a vast amount of data being generated every second by our operations and our people. To determine the value of data, size of data plays a very crucial role. Some of our systems generate small additions each day to datasets and others generate massive amounts of new information in short time spans. ***Volume has an impact on system sizes, processing times, and refresh cycles.***



VELOCITY

Increasing in speed

While data volumes grow, the speed of data creation and use is increasing too. This means processing, storage, and analysis must accelerate in tandem. We know UNT gets a business advantage in having and acting on the most up-to-date information. Receiving data in a timely fashion promotes insights as soon as possible. Understanding data's velocity also requires us to recognize data can be perishable if it's updated or overwritten (especially in our transactional data systems). ***Velocity has an impact on the ability to connect the right data to the right question at the right time.***



VARIETY

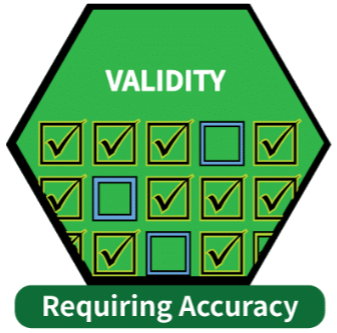
Expanding in types

Data comes in numerous shapes and forms, from geospatial data to website logs, from tweets to visual data like photos and videos. Though often overlooked compared with the well-publicized issue of 'volume,' the variety of data at UNT is likely to be ignored by most institutions in favor of traditional database output. Our ability to harness the different forms together is a key stepping stone to take our data analysis to the next level. ***Variety has an impact on how we approach answers to data questions.***

VALIDITY

Requiring accuracy

Validity is about ensuring the reliability and trustworthiness of the insights derived from data. Inaccurate data is at best virtually worthless, and at worst, even damaging. Validity requires checks and balances and is often most associated with effective data governance processes. ***Validity has an impact on whether data consumers trust your work and feel comfortable making a decision based on it.***



VULNERABILITY

Needing security

The proliferation of data has left many people feeling exposed and vulnerable to how their data are being used, stored, and kept private. To alleviate confusion and apprehension, many institutions are moving towards privacy by design and becoming far more transparent around data usage and value. In 2020, the State of Texas passed SB 475 (link to this) outlining requirements for state agencies to manage and protect data. Vulnerability also has a direct impact on UNT's ability to build brand reputation and trust. Strong security practices, including the use of capabilities to manage privacy and security challenges, can set UNT apart from our competition and create comfort and confidence with our stakeholders. ***Vulnerability has an impact on how data is used ethically and how the user takes proactive steps to protect this asset.***

VALUE

Delivering on ROI

Value is where the rubber meets the road. How our data is utilized to improve the outcomes for our students, faculty, and staff should be the ultimate measure of a particular data element. By itself, data has no intrinsic value. It only becomes useful to UNT when you' are able to extract the insights needed to solve a particular problem or meet a specific need. Value is also dependent on the creativity of the user and identifying appropriate use cases to apply information to a given problem. ***Value has an impact on how we either succeed or face challenges in attempting to follow through on our mission.***

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Lesson 7 of 15

The Importance of Data Quality

Data quality is a **measurement** of how fit a data set is to serve the specific needs of an organization (Precisely, 2023). UNT requires high quality data for trusted decisions. However, how data quality is defined will depend somewhat on the requirements of the business.

Luckily, some criteria has been defined to help organizations in their data quality management efforts.

Take a look to the following **eight dimensions** to help measure data quality.

Completeness: I have what I need
Consistency- I see the same answer from multiple sources
Accuracy- I believe the data are factual
Timeliness- I have what I need when I need it

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Completeness: I have what I need
Consistency- I see the same answer from multiple sources
Accuracy- I believe the data are factual
Timeliness- I have what I need when I need it
Currency- I have the latest version of what I need
Integrity- I trust and stand behind what I see
Validity- What I have mirrors what I would expect to see
Auditability- I can see a trail of introduced changes

VOCABULARY

DATA LITERACY AT UNT

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Lesson 8 of 15

Vocabulary

START QUIZ >

Question

01/06

Velocity refers to the numerous shapes and forms in which data can be found; from geospatial data to website logs, from tweets to visual data like photos and videos.

- ○ False
- ○ True

SUBMIT

Question

01/06

Velocity refers to the numerous shapes and forms in which data can be found; from geospatial data to website logs, from tweets to visual data like photos and videos.

- ✓ False
- ⊗ True

✓

Correct

NEXT

Question

02/06

Validity is about ensuring the reliability of the insights derived from data.

- ○ False
- ○ True

SUBMIT

Question

02/06

Validity is about ensuring the reliability of the insights derived from data.

- ⊗ False
- ✓ True

✓

Correct

NEXT

Question

03/06

Variety has an impact on

- ○ how data is used ethically and how the user takes proactive steps to protect this asset.
- ○ how we either succeed or face challenges in attempting to follow through on our mission.
- ○ how we approach answers to data questions.

SUBMIT

Question

03/06

Variety has an impact on

- ⊗ how data is used ethically and how the user takes proactive steps to protect this asset.
- ⊗ how we either succeed or face challenges in attempting to follow through on our mission.
- ✓ how we approach answers to data questions.

✓

Correct

NEXT

Question

04/06

Value refers to how our data is utilized to improve the outcomes for our students, faculty, and staff should be the ultimate measure of a particular data element.

- ○ False
- ○ True

SUBMIT

Question

04/06

Value refers to how our data is utilized to improve the outcomes for our students, faculty, and staff should be the ultimate measure of a particular data element.

- ⊗ False
- ✓ True

Correct

NEXT

Question

05/06

Vulnerability has an impact on

- how we either succeed or face challenges in attempting to follow through on our mission.
- how data is used ethically and how the user takes proactive steps to protect this asset.
- system sizes, processing times, and refresh cycles.

SUBMIT

Question

05/06

Vulnerability has an impact on

- how we either succeed or face challenges in attempting to follow through on our mission.
- how data is used ethically and how the user takes proactive steps to protect this asset.
- system sizes, processing times, and refresh cycles.

Correct

NEXT

Question

06/06

Volume refers to

- ○ the vast amount of data generated every second, by organizations and consumers.
- ○ how our data is utilized to improve the outcomes for our students, faculty, and staff should be the ultimate measure of a particular data element.
- ○ the numerous shapes and forms in which data can be found; from geospatial data to website logs, from tweets to visual data like photos and videos.

SUBMIT

Question

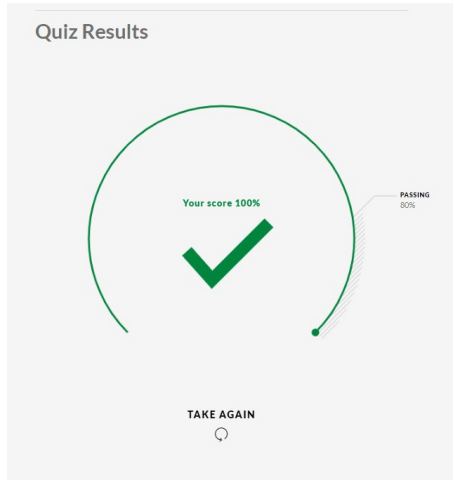
06/06

Volume refers to

- ✓ the vast amount of data generated every second, by organizations and consumers.
- ✗ how our data is utilized to improve the outcomes for our students, faculty, and staff should be the ultimate measure of a particular data element.
- ✗ the numerous shapes and forms in which data can be found; from geospatial data to website logs, from tweets to visual data like photos and videos.

Correct

NEXT



DATA LITERACY AT UNT

53% COMPLETE

- Learning Objectives
- Why Data Literacy at UNT?
- Why is Data Literacy Important?
- What is Data and Data Literacy?
- Knowledge Check
- Demystifying Data Down to it's Core
- The Importance of Data Quality
- Vocabulary
- Undertanding our UNT Data Constructs
- Knowledge Check
- Asking The Best UNT Question Possible
- Now That Your Data Literacy Journey Has Begun

Lesson 9 of 15

Undertanding our UNT Data Constructs

Building off of what is high quality data, the next step is to understand how data is constructed at UNT. In order to ask the right question in your role at UNT, you need to understand the data constructs around it. There are five key factors you need to think about before formulating the right question; data lineage (aka sources), data availability, data transparency, population, timing, and sources where the data come from.

Questioning Sources: Understanding Correct Uses

OFFICIAL STATE REPORTED DATA

TX Formula funded students only-Uses the Coordinating Board (CB) format-Census & Final

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OFFICIAL FEDERAL REPORTED DATA

All students- Uses IPEDS format-Fall, Winter, or Spring Windows

TRANSACTIONAL DATA VIA E.T.L PROCESS

Snapped at the time of extract from live system- Daily, weekly, monthly, etc.

TRANSACTIONAL DATA VIA TOOL/SOURCE

As is at time of viewing- Near live and subject to change

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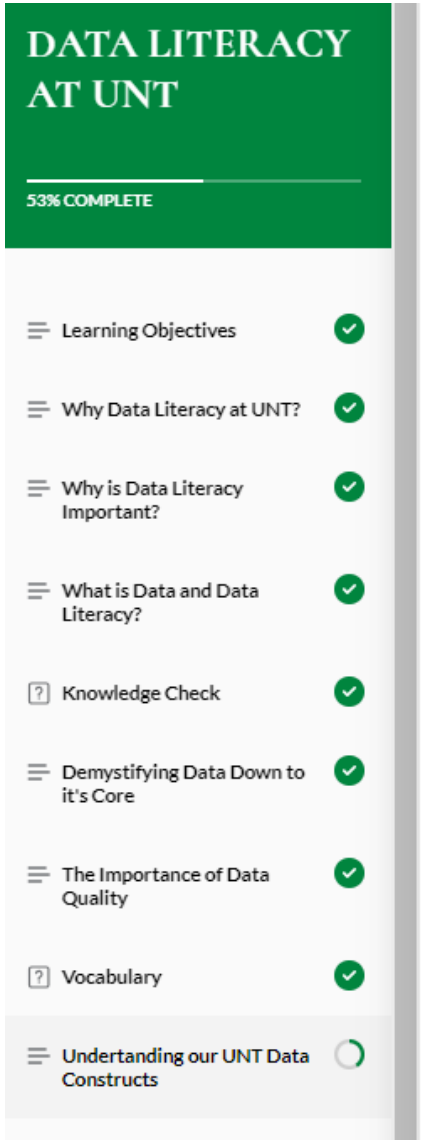
- Additional Resources

Data lineage refers to the process of tracking the origin, transformation, and movement of data from its sources to its destination. Understanding data sources provide UNT with valuable insights into its data infrastructure, enabling them to better understand how data is used to improve data quality, compliance, and overall decision-making processes.

Questioning Availability: Understanding Data Existence

- Data is known to exist in source but not captured further for analysis
- Data captured in nightly process for manual AD-HOC coding analysis
- Data captured in nightly process but not tied to a data model for multiple use cases
- Data is modeled & flowing into data warehouse & available for reporting and analytics

Data availability at UNT refers to the ability to access and use data when needed. It is a measure of how quickly and reliably data can be retrieved and utilized by users or applications. High data availability is important to UNT as it ensures business continuity in the event of system failures or disruptions. Data availability is typically achieved through redundancy, backup, and disaster recovery measures.



Questioning Transparency: Understanding Data Processes

- Data & process is hidden or unknown in source system
- Data & process is documented but not shared broadly
- Data & process is documented & governed for others to discover
- Changes to data & process are communicated protectively to others

Data transparency refers to the degree to which information about data collection, processing, storage, and usage is readily available and understandable to stakeholders. At UNT, we make sure we can provide clear and concise information about how data is used, who has access to it, and how it is secured. Many of these processes are captured by data governance practices that ensure accountability and compliance with regulations and state policies.

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Questioning Populations: Understanding who is included

Individual student, faculty, or staff member	Disaggregated & Identifiable
Sample of students, faculty, or staff members	Disaggregated & Identifiable
Sample of students, faculty, or staff members	Aggregated & Unidentifiable
All students, faculty, or staff members	Disaggregated & Identifiable
All students, faculty, or staff members	Aggregated & Unidentifiable
Multiple YRS, students, faculty or staff members	Disaggregated & Identifiable
Multiple YRS, students, faculty or staff members	Aggregated & Unidentifiable

Population Understanding who to include in your population at UNT will have a direct impact on your end result. Who you choose to include in your question will dictate who needs to be identified in your resulting dataset. Having a clear understanding of your population BEFORE asking your data question not only saves everyone time but also allows you to think critically about the problem or challenge you are trying to address.

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Question Timing-Understanding Time Parameters

Daily

Days out to first class day 1st, 12th & 20th Day Census

Weekly

Admissions 1-34 reported 35-36-52

Term

1231-Spring 23

1233-Summer 23

1238-Fall 23

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Academic Year (TX)

Fall 22 & Spring 23 & Summer 23

Academic Year (IPEDS)

Summer 22 & Fall 22 & Spring 23

Fiscal Year

September 1 to August 31

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Data timing refers to the chronological order of data events and their relationship to each other. Similar to population, asking a data-informed decision requires you to choose your time interval. Recognizing how you describe the timing element of your question is key to getting accurate data back. Being explicit in your time parameters helps eliminate data that may not be relevant as well as ensuring data that is required is appropriately identified and surfaced.

Questioning whether or not you want academic year data (which is utilized by the THECB from a timing perspective) or fiscal year data (which is different and utilized by IPEDS) is just a small example of how timing matters in your final dataset as both entities above include different months and terms in their calculation.

At UNT, when you clarify data timing, you recognize this is an essential step for data analysis, forecasting, and decision-making.

Questioning Lineage: Understanding Data Origination

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1 of 5

The image above depicts data major sources at UNT. These data sources are derived from a technical lineage process that starts at a database layer and surfaces data to end-users. The lineage examples above refer to some of the primary channels from which data is collected or generated.

Take some time to think about any other sources you might know of. Many of these other sources are helpful for localized use but may not be surfaced to our entire UNT data user community.

Major sources at UNT can include internal systems such as customer relationship management (CRM) platforms, enterprise resource planning (ERP) systems, or visual analytics tools, as well as external sources such as social media, online surveys, or

Peoplesoft (EIS)

1 of 5

LSPD
FSPD
HRPD

1 of 5

Salesforce

2 of 5

Customer Relationship Management

2 of 5

Canvas

3 of 5

Learning Management Software

3 of 5

External

4 of 5

National Student Clearinghouse
NIH/NSF
NCES
Texas Higher Education
Coordinating Board
CREWS

4 of 5

Internal

5 of 5

Department Generated
Spreadsheet or Shadow Database

5 of 5

DATA LITERACY AT UNT

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Major sources at UNT can include internal systems such as customer relationship management (CRM) platforms, enterprise resource planning (ERP) systems, or visual analytics tools, as well as external sources such as social media, online surveys, or public databases. Understanding the major sources of data is important for identifying potential data quality issues, ensuring data accuracy, and optimizing data collection and integration processes.

Major sources at UNT can include internal systems such as customer relationship management (CRM) platforms, enterprise resource planning (ERP) systems, or visual analytics tools, as well as external sources such as social media, online surveys, or public databases. Understanding the major sources of data is important for identifying potential data quality issues, ensuring data accuracy, and optimizing data collection and integration processes.

Effective data management strategies often involve consolidating and standardizing data from multiple sources to create a unified and comprehensive data ecosystem.

What is key to understand about data sources and why we utilize the term "lineage" is that not all sources are connected to the larger data ecosystem. We cannot analyze data that is housed within a closed-off system. In order for UNT to mature we must work collaboratively to break down these data silos into pathways that can support data sharing and analytic visualization. This is important to consider when you or your department are choosing third party vendors. Key questions to ask are: "**How does UNT get access to these data beyond your tool? Do you have a way for us to extract your data? How does this process work?**

KNOWLEDGE CHECK

Lesson 10 of 15

Knowledge Check

START QUIZ >

Question

01/02

Which of the following data constructs refers to the process of tracking the origin, transformation, and movement of data from its sources to its destination?

- ○ Data Lineage
- ○ Poupulation
- ○ Data Transparency

SUBMIT

Question

01/02

Which of the following data constructs refers to the process of tracking the origin, transformation, and movement of data from its sources to its destination?

- ✓ Data Lineage
- ⊗ Poupulation
- ⊗ Data Transparency

✓

Correct

NEXT

Question

02/02

Which of the following is a definition of data transparency?

- ○ Data Transparency refers to the ability to access and use data when needed. It is a measure of how quickly and reliably data can be retrieved and utilized by users or applications.
- ○ Data Transparency refers to the process of adding data to a database or other data storage system.
- ○ Data Transparency refers to the degree to which information about data collection, processing, storage, and usage is readily available and understandable to stakeholders.

SUBMIT

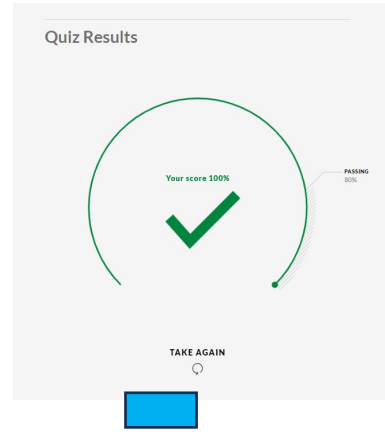
Question

02/02

Which of the following is a definition of data transparency?

- ○ Data Transparency refers to the ability to access and use data when needed. It is a measure of how quickly and reliably data can be retrieved and utilized by users or applications.
- ○ Data Transparency refers to the process of adding data to a database or other data storage system.
- ◉ Data Transparency refers to the degree to which information about data collection, processing, storage, and usage is readily available and understandable to stakeholders.

SUBMIT



DATA LITERACY AT UNT

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- Additional Resources

Lesson 11 of 15

Asking The Best UNT Question Possible

What are the questions a data-literate UNT professional should ask?

Now that you have learned about the different UNT data constructs, data types, and data attributes, the final piece is to bring it all together to frame out the best business question possible.

The following framework will help you dive into this world by expanding your notion of the elements involved in a great business question. See below for additional clarification on each item after you review the short video below.

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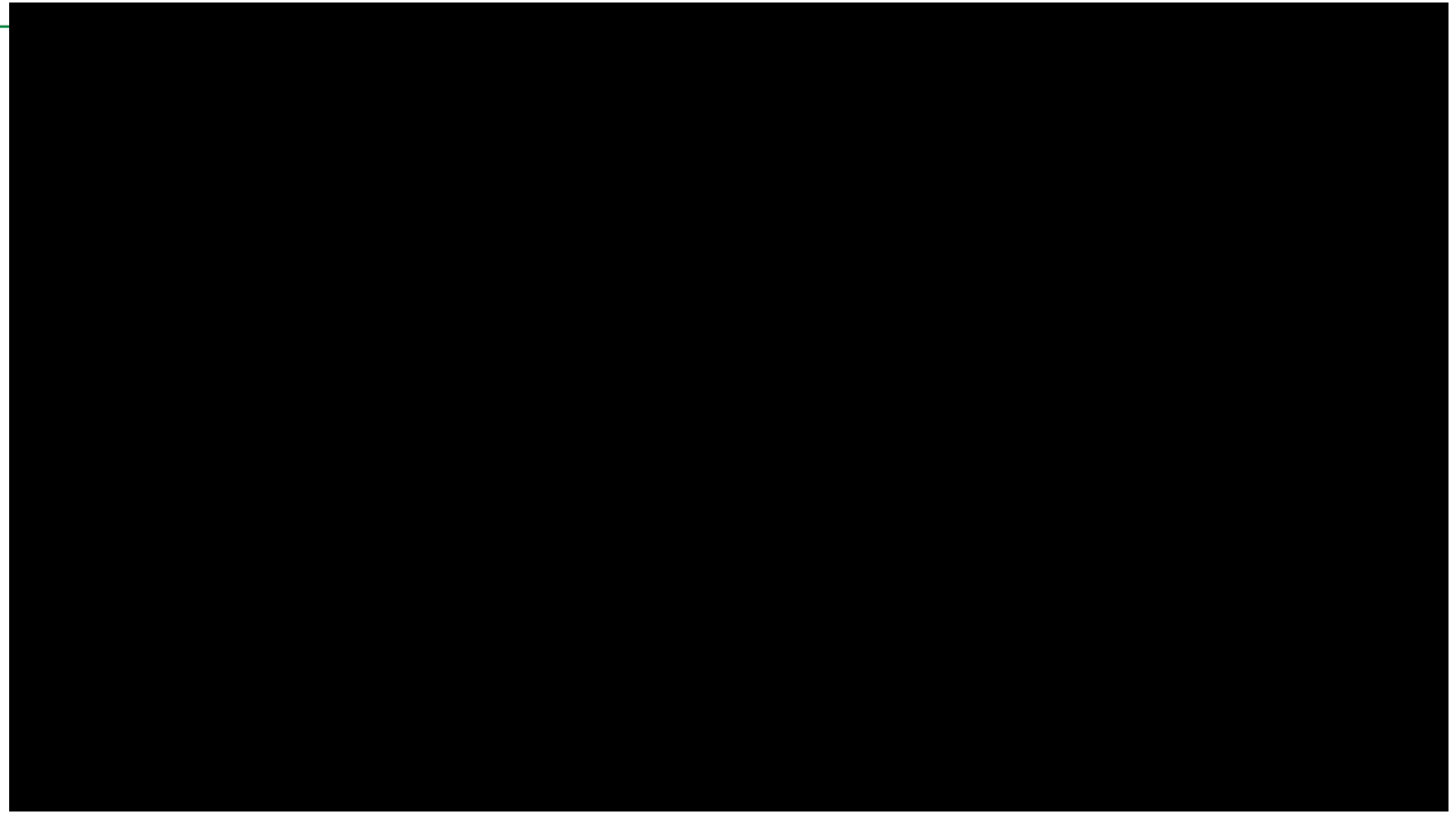
Asking The Best UNT Question Possible



TO PREPARE YOUR DATA REQUEST, ASK:

1. What entities do you want to engage in this process?
2. Who is going to be encompassed by the data?
3. What are you trying to measure, in terms of sub-variables or characteristics?
4. What is the timing that you need this data to encompass?
5. What is the source of the data?
6. Do you need transactional or official data?
7. How often will you need this data?
8. What method do you believe would help us get to your desired outcome?

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ASKING A BETTER QUESTION AT UNT BY APPLYING DATA LITERACY SKILLS

- In order to develop and/ or implement a (ACTION)about (ENTITY) at UNT, we need to know:
- How many (WHO as described by WHAT) in (WHEN) as part of (TIMING) using data from (SOURCE that is VELOCITY) are ACTION?
- This request is needed in (FORMAT) and we anticipate needing this each (FREQUENCY).
- We think (METHOD)may be needed ... do you agree?

ACTION +

ENTITY +

WHO +

WHAT +

WHEN +

TIMING +

DATA LITERACY AT UNT

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ACTION

New Policy, Intervention, Reporting Requirement, Grant, etc.

ENTITY

Individual, department, unit, division, accreditation body, etc.

WHO

FTIC, New UG Transfers, New Grad, All UG? All Grad? Faculty? Staff?

WHAT

Gender, Ethnicity, FT/PT Status, Major, TSI status, 1st Gen, etc.

WHEN

This term, previous term, or anticipated future terms

DATA LITERACY AT UNT

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TIMING

Academic year, fiscal year, THECB year, IPEDS year, etc.

SOURCE

EIS student, Canvas, Salesforce, Financial, HR, etc.

VELOCITY

Transactional, Official, Historic, etc.

FORMAT

Data presented in aggregate, detailed, tabular, etc.

DATA LITERACY AT UNT

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FORMAT +

FREQUENCY –

Once, each long semester, annually, etc.

METHOD –

Raw, descriptive, or more advanced, etc/

Let's break the framework above into a few steps.

START >

Step 1

Define the problem or objective

Start by clearly defining the problem you want to solve or the objective you want to achieve. What are the business goals or outcomes you're trying to influence with data?

"In order to develop and/or implement an [ACTION] about [ENTITY] at UNT, we need to know..."

1 2 3 4 5 6 ✓

Step 2

Identify the data sources

Determine the relevant data sources and their quality. What data do you have and what is missing? Are there any issues with data quality or completeness?

"How many (WHO as described by WHAT) in (WHEN) as part of (TIMING) using data from (SOURCE that is VELOCITY) are ACTION."

1 2 3 4 5 6 ✓

Step 3

Formulate the question

Develop a clear and specific question that can be answered with data. What are the key metrics, variables, or trends you need to understand to address the problem or achieve the objective?

Combine step one and two.

1 2 3 4 5 6 ✓

Step 4

Determine the analysis method

Identify the appropriate analysis method or tool for answering the question. What type of analysis do you need to perform - descriptive, diagnostic, predictive or prescriptive? If unsure, it is OK to ask.

"This request in needed in (FORMAT) and we anticipate needing this each (FREQUENCY). We think (METHOD) may be needed..."

1 2 3 4 5 6 ✓

Step 5

Validate the results

Once the analysis is complete, validate the results to ensure they are accurate and reliable. Does the analysis address the question or objective? Are there any issues with the data, assumptions or model used for analysis?

1 2 3 4 5 6 ✓

Step 6

Communicate the findings

Finally, communicate the findings in a clear and concise manner that is relevant to the problem or objective. What insights or recommendations can you draw from the data? What is the significance of the findings for business outcomes? Be prepared to talk about the population you studied, the timing of your data, and the methods used to arrive at your results.

1 2 3 4 5 6 ✓

Summary

By following this framework, all UNT employees can ensure that they're asking data-literate questions that are relevant to UNT business needs, are based on reliable UNT data, and can provide meaningful insights and recommendations to impact student and institutional success.

START AGAIN

1 2 3 4 5 6

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Now That Your Data Literacy Journey Has Begun

First, thank you for your commitment to ensuring all UNT practitioners understand and apply data from a place of knowledge. Changes in how our State requires us to show evidence of data literacy matters to all of us. This course was designed to jumpstart your journey as a data practitioner at UNT. We know this is not the final step in your journey as we will add additional bridge trainings in the future for you to dig deeper.

Second, we know that great questions rely on having access to the data you need at UNT. The next page is a helpful set of resources to direct you to an array of higher education data resources (both internal and external). In addition to the text, you will see a PDF link on the next page that we encourage you to download and save to your desktop.

ADITIONAL RESOURCES

DATA LITERACY AT UNT

80% COMPLETE

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Additional Resources

DAIR RESOURCES

Insights 2.0 Page: data.unt.edu

- Access to Insights 2.0
- Insights Training Page
- Tips on Data Governance
- Microsoft Teams Insights User Group for Trained Insights Users

Data, Analytics, and Institutional Research Page: Institutionalresearch.unt.edu

- Factbooks (Historic)
- Common Datasets (Current and Historic)
- Ad-Hoc Request

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- Common Datasets (Current and Historic)
- Ad-Hoc Request

EXTERNAL RESOURCES

- Integrated Postsecondary Education Data System
- Post-Secondary Employment Outcomes Explorer
- Texas Consumer Resource for Education and Workforce Statistics
- Texas Department of Information Resources
- Texas Data Literacy Resource Guide
- Texas Education Agency
- Texas Higher Education Coordinating Board Data Source Page
- U.S. Department of Education College Scorecard

REFERENCES

DATA LITERACY AT UNT

87% COMPLETE

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References

- Building Data Literacy: The Key to Better Decisions Greater Productivity, and Data-Driven Organizations. (2022, February). Forrester, https://www.forrester.com/bold
- Data Definition (n.d.) Merriam Webster Dictionary.retrieved from https://www.merriam-webster.com/dictionary/data
- Data Quality Definition.(2023). Precisely. https://www.precisely.com/
- Panetta, Kasey (2021, August 26) A Data Analytics Leader's Guide to Data Literacy. Gartner. https://www.gartner.com/smarterwithgartner/a-data-and-analytics-leaders-guide-to-data-literacy
- The 6 Vs of Big Data. (n.d.) Neural Technologies. https://www.neuralt.com/the-6-vs-of-big-data-neural-technologies/
- White Paper: A Data Powered Future. (2017). Experian. www.experian.co.uk
- 8 Dimensions of Data Quality. (2023). Plutoshift. https://plutoshift.com/

CONCLUSION

DATA LITERACY AT UNT

100% COMPLETE

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Lesson 15 of 15

Conclusion

Congratulations on finishing the Data Literacy at UNT course. We will reach out with new modules as they are brought into the Bridge environment.

Click the Exit button in the top right hand corner to exit the course and be taken back to Bridge.

For more information and upcoming trainings please visit data.unt.edu. If you have any questions, please contact our team at insights@unt.edu or call (940) 565-2085.

Where to Find Us

- Data, Analytics, and Institutional Research | UNT
- Insights@unt.edu
- (940) 565-2085
- Student Services Building 180

DAIR's Training Process Flow

- All trainings have now been moved to our UNT Bridge Ecosystem
- DAIR grants role-based permissions upon successfully completing Insights 2.0 training and ensuring FERPA status is active
- DAIR requires all trained users to also submit a user agreement form that outlines the roles and responsibilities of being a member of the Insights analytic community
- DAIR is strongly recommending that the Data Literacy course be taken prior to Insights 2.0 training to help level set the community on the basics of understanding what data we utilize on campus
- Training launched in early February so usage statistics are not yet available. We plan on pulling data in end of May to set a benchmark for future.

Closing Thoughts & Next Steps

Q&A?

Want More Information or to Follow Up?

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www.linkedin.com/in/drdanhubbard/

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Jason.simon@unt.edu
www.linkedin.com/in/jasonfsimon/