



Data Literacy Institute Curriculum Overview

2021



ASSOCIATION
FOR INSTITUTIONAL
RESEARCH

The Data Literacy Institute (the Institute) is built with recognition that higher education institutions, the students they enroll, and the faculty and staff they employ collectively realize great achievements through teaching, research, and community engagement. This success grows out of environments that foster and support learning and inquiry, require exploration and evaluation, and strive for innovation and continuous improvement. A goal of the Institute is to help institutions realize those cultures by valuing and investing in professionals' abilities to be sophisticated consumers and, where relevant, producers of data and information with contextual understanding of their environments.

THE CURRICULUM

The curriculum delivered in the Institute is part of the Association for Institutional Research (AIR) Data and Decisions® Academy *Data Literacy Program*. The curriculum establishes the **knowledge, skills, mindsets, and habits** needed to empower individuals to use and apply data strategically to make better and ethical decisions.

THE DESIGN

A cohort of 20 individuals from across the institution, including faculty, advisors, administrators, and other staff directly involved with student learning, development, or support engages in a 2-term learning experience. A team-based approach is used to apply what is learned through a group activity designed to meet a current institutional need. The Institute is comprised of 2 terms, each 3 months in length. Every month offers a different section of Institute content and includes approximately 20 hours of work: 4 hours of webinars, 8 hours of virtual seminars, and 8 hours of independent/group work. The curriculum is delivered through a combination of webinars, virtual seminars, and individual and group readings, activities, and exercises, culminating in a collaborative research project.

Term 1: The first term runs from September through mid-December and includes three sections, each approximately one month long. The collaborative research project is kicked off at the start of the Institute and weaves throughout the curricula.

Term 2: The second term runs from February through mid-May and includes three sections, each approximately one month long. The term culminates with completion and presentation of the collaborative research project.

RELEVANCE AND VALUE

Data have little to no intrinsic value. It is through engagement with data—from collection, to analysis, to interpretation, to communication, to action—that we unlock meaning and insights to inform our practices and our decisions that impact and shape the student experience and improve the effectiveness of our institutions. This requires data literacy. To do this work, we must be sophisticated producers and consumers of data within our realms of control and spheres of influence. The curriculum delivered at the Institute is designed to introduce the **knowledge, skills, mindsets, and habits** needed to develop and support data literacy.



Knowledge: What we know. A data literate person understands that data do not tell us what to do. Rather, data are used to measure and explore outcomes with the goal to learn what works, what does not work, and why. It is the discovery of the why that leads to replicable organizational and individual practices and habits that fuel continuous improvement.



Skills: What we can do. A data literate person knows how to use data to measure and explore outcomes with the goal of developing and communicating actionable insights to inform decisions.



Mindsets: What we think. A data literate person thinks about, approaches, and uses data in a way that supports a data-informed decision culture. These attitudes include belief that data comprise a language that anyone can learn to understand and speak; curiosity; confidence; mindfulness; collaboration; commitment; integrity; and acknowledgement that biases exist.



Habits: What we do. A data literate person works in a way that supports a data-informed decision culture. These behaviors include utilization of data; sharing data; advocacy for data; maintenance of ethical standards; identification of one's own biases; attention to the human element of data and information; and enthusiastic sharing of data literacy among colleagues and stakeholders.

CALENDAR: ACTIVITIES AND OUTCOMES

Term 1 (September – December)

Each term is broken up into 3 sections, each a month long and includes approximately 20 hours of work: 4 hours of webinars, 8 hours of seminars, and 8 hours of independent and/or group activities.

SECTION 1: START WITH QUESTIONS

The ability to ask, then answer, questions is central to data literacy. Instead of being passive consumers of information, stakeholders in data-informed decision cultures are active participants. In any project, questions direct the search for information and the results guide action, including improvement efforts.

Lectures, discussions, activities, and work

- Explore the concepts of data literacy and data-informed decision cultures
- Consider the impact of various cognitive biases on data analysis and use
- Discuss the importance of academic curiosity in data-informed decision cultures
- Translate ideas into research questions
- Vet research questions for suitability and fit
- Locate appropriate published research and prior institutional work related to research questions
- Identify real-world constraints that impact exploration of research questions
- Acknowledge and address relevant ethical implications, including biases

SECTION 2: CONNECT QUESTIONS TO DATA

Once we clearly identify the questions we seek to answer and gain relevant context, we must identify and collect the data needed to fulfill our queries. To do this, we need to know what data exist at the institution and whether they can address our questions. If no data exist – or not enough data – we may need to collect new data to inform our work. This requires knowledge about data, including common terminology and the way data are managed at the institution, which is only achieved when stakeholders possess the necessary language to be savvy consumers and producers of information.

Lectures, discussions, activities, and work

- Learn common data-related terminology and concepts of data governance and management
- Recognize types of data
- Identify sources of administrative, non-administrative, and external data

- Explore the institution’s data environment
- Appreciate when and why surveys are used to collect data
- Explore the principles of sampling, reliability, and validity
- Acknowledge and address relevant ethical implications, including biases

SECTION 3: REVEAL THE DATA’S INFORMATION

Data, in their raw form, are useless for decision making. Our institutions are filled with spreadsheets and tables of data; simply looking at them provides us with no information about student success, the student experience, or how we can improve our institutions. However, with even the most basic techniques of analysis, raw data can be summarized and transformed into information that provides insight about how students are successful, where they struggle, and ways in which we can allocate resources.

Lectures, discussions, activities, and work

- Learn which basic statistics are often used to analyze higher education data
- Interpret the results of analyses within the context of the institution and the collaborative research project
- Consider the institution’s key performance indicators and how they compare to national student success metrics
- Identify the differences in data definitions between institutional and national metrics
- Acknowledge and address relevant ethical implications, including biases

Term 2 (February – May)

Each term is broken up into 3 sections, each a month long and includes approximately 20 hours of work: 4 hours of webinars, 8 hours of seminars, and 8 hours of independent and/or group activities.

SECTION 1: CONVEY THE INFORMATION

Research and assessment reports often bring to mind images of dry text with statistical jargon, complicated graphs, and lack of actionable recommendations. Our goal is to help participants be more effective and engaged producers and consumers of information.

Lectures, discussions, activities, and work

- Know your audience
- Simplify and contextualize complex information for your audience
- Identify common types of data visualizations, when to use them, and common pitfalls

- Explore the principles of data storytelling
- Create a data story to engage your audience
- Acknowledge and address relevant ethical implications, including biases

SECTION 2: TAKE PRUDENT ACTION

Ideally, decisions are based on a mix of intuition, credible data, and the professional knowledge and expertise of trusted colleagues. That is, we aspire to work in data-informed decision cultures and to take prudent action. Yet there are many forces that make it easy to step off this path, even unintentionally. When used on its own, intuition may feel like the “right” information to make decisions, and it may support the institutional culture. Yet doing so risks seeing the larger picture, missing the hidden stories, and overlooking relevant changes and developments across the institution. Likewise, when decisions are based only on data, we risk the context and nuance needed to achieve holistic understanding. Without a blended approach to decision making informed by people’s perspectives, data, information, and attention to institutional culture, action is simply action. That is, action is not prudent if not grounded in a data-informed decision culture.

Lectures, discussions, activities, and work

- Explore the key components of data-informed decision cultures
- Consider different models for decision making
- Prioritize transparency in decision making
- Understand the ways in which resistance to change impacts decision making
- Acknowledge and address relevant ethical implications, including biases

SECTION 3: CLOSE THE LOOP...AND CONTINUE IT

The health of a data-informed decision culture requires transparency as well as reflection on decisions at all levels of the institution. This is not to suggest that all decisions from tiny to huge be subjected to the same levels of scrutiny. However, as a practice, it is important for all of us, regardless of scope of work, to evaluate our decisions. Without playful attention to closure of this loop, reflection does not happen and the opportunity to glean insights to inform and improve our work is lost, making us susceptible to intuition-only or data-only decisions, as described above.

Lectures, discussions, activities, and work

- Explore the ways in which the institutional culture contributes to and inhibits regular, honest, transparent evaluation of decisions
- Identify the elements of the assessment cycle
- Determine what decisions need to be reviewed

- Anticipate the questions that will arise about the decisions
- Build into the system ways to collect data to assist with evaluations of decisions
- Learn to fail fast and appreciate the value in doing so
- Acknowledge and address relevant ethical implications, including biases

PROGRAM OBJECTIVES

As a result of the program, participants will understand:

- the importance of curiosity in data-informed decision cultures
- the process of developing and answering research questions
- how to locate appropriate published scholarship and institutional information related to research questions
- how to recognize constraints that can impact the ability to explore research questions
- how to identify the impacts of biases on data collection, analysis, and use
- common data-related higher education terminology
- how to identify sources of administrative, non-administrative, and external data
- basic concepts related to data governance and management
- when and why surveys are used to collect data
- common statistics used to analyze higher education data
- the principles of sampling, reliability, and validity
- how to interpret the results of analyses within the context of their collaborative research projects and their institutions
- how data are transformed into information
- how to interpret the results of analyses within the context of their projects and their institutions
- the ethical consideration around data use

As a result of the program, participants will be able to:

- describe the various audiences for project reports and identify their reporting needs
- identify common types of data visualizations, when to use them, and common pitfalls
- articulate the principles of data storytelling
- create data stories
- identify how personal and professional biases can inhibit data stories
- identify the key components of data-informed decision making cultures
- articulate models for decision making
- describe how personal and professional differences affect decision making
- discuss the importance of transparency in decision making
- define the aspects of institutional culture that contribute to, and inhibit, decision making
- articulate the key components of the assessment cycle
- identify decisions that need to be reviewed
- critically evaluate decisions and determine if adjustments are needed

MORE THAN A SINGLE INITIATIVE

The Institute is not designed to be a one-off professional development program, nor is it a panacea. Rather, it is part of a larger, coordinated effort to transform institutions into evidence-based learning organizations. Thus, sustainability is a key consideration in the design and development of the program and surrounding support structures. The Institute helps establish a viable data literacy model that indicates how much institutions need to invest to support their own data literacy training in subsequent years. We expect institutions will differ in their levels of interest and commitment to additional data literacy training beyond the Institute. In anticipation of these differences, AIR is planning a variety of add-on options to help support institutions in their quests to achieve their data literacy goals.