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IMPROVING DATA LITERACY AT BALL STATE: OUR APPROACH

October 2025

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Introductions

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Why are we here?

Abstract:

Improving data literacy at a large, professions-focused university demands a plan that is deep and scalable. In this presentation we discuss Ball State University's journey- identifying a key training partner, training 60 of our heaviest data users, extending their capstone project, and broadening access to data literacy training. This webinar shares the rationale, execution, early outcomes, lessons learned and outlines next steps as Ball State rolls out on demand offerings and research products university-wide.

Learning Outcomes:

- Understand how a focused power-user cohort can contribute to a sustainable campus-wide data culture shift.
- Learn how BSU scaled a proven data literacy curriculum and is scaling it through modular, self-paced courses.
- Take away ideas about how capstone work can evolve into decision-shaping research that directly informs university policy.

About Ball State and IRDS

Ball State University:

- Public R2 Carnegie Institution
- Located in Muncie, Indiana
- ~ 21,000 students per year
- ~ 3300 faculty and staff

Institutional Research and Decision Support (IRDS):

- 10 Full Time, 1 Part Time, and 1 Graduate Assistant positions
- Housed in Chief Strategy Office
- IRDS Blog, Data Insider
- IRDS on LinkedIn

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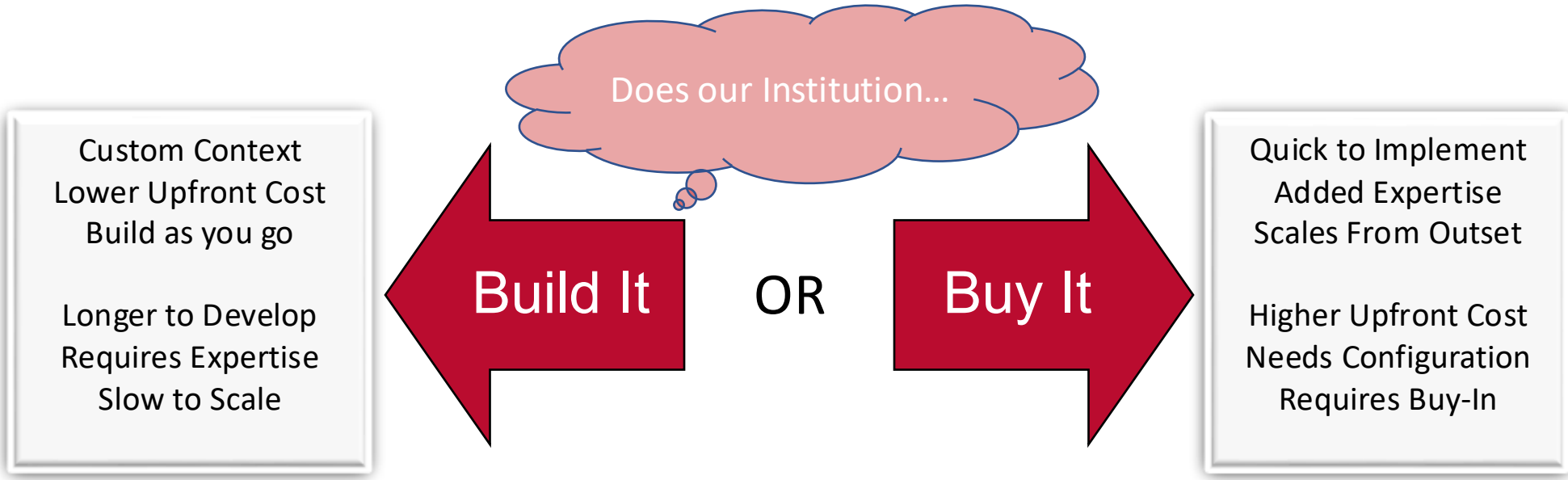
Data Literacy: A Fork in the Road…



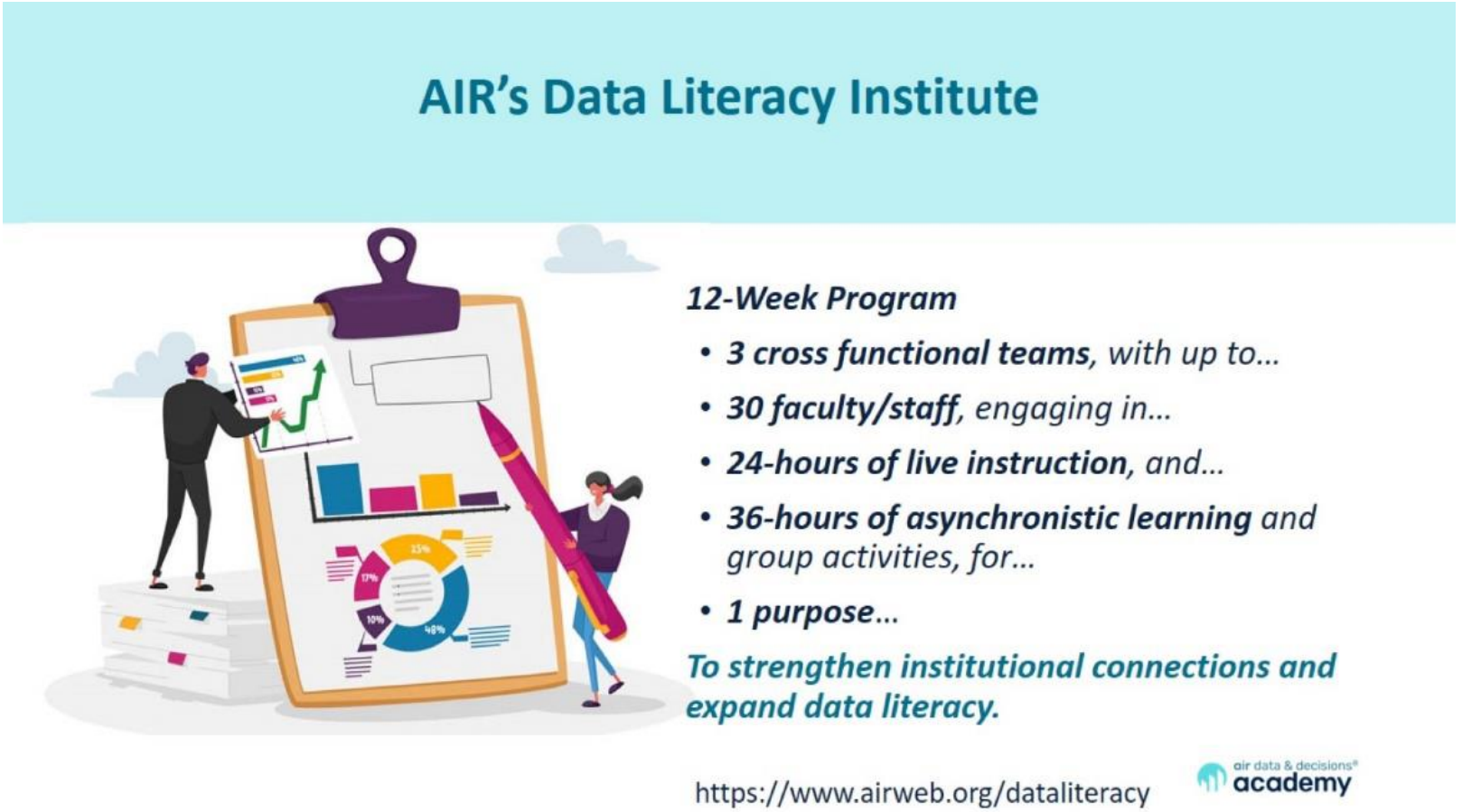
At Ball State, we were looking to improve our data literacy in a way that scaled well and provided both immediate and ongoing benefits.

We recognized early on that trying to develop our own data literacy curriculum would take more time than we had available.

After looking at the options available to us, we decided to partner with AIR to offer the Data Literacy Institute at BSU.

Enter: AIR's Data Literacy Institute

- Instructor-led synchronous teaching
- 2-hour discussions per week over 12 weeks
- Group learning, discussions, and capstone project
- $20,000 per cohort (30 people) as of 8-22-25



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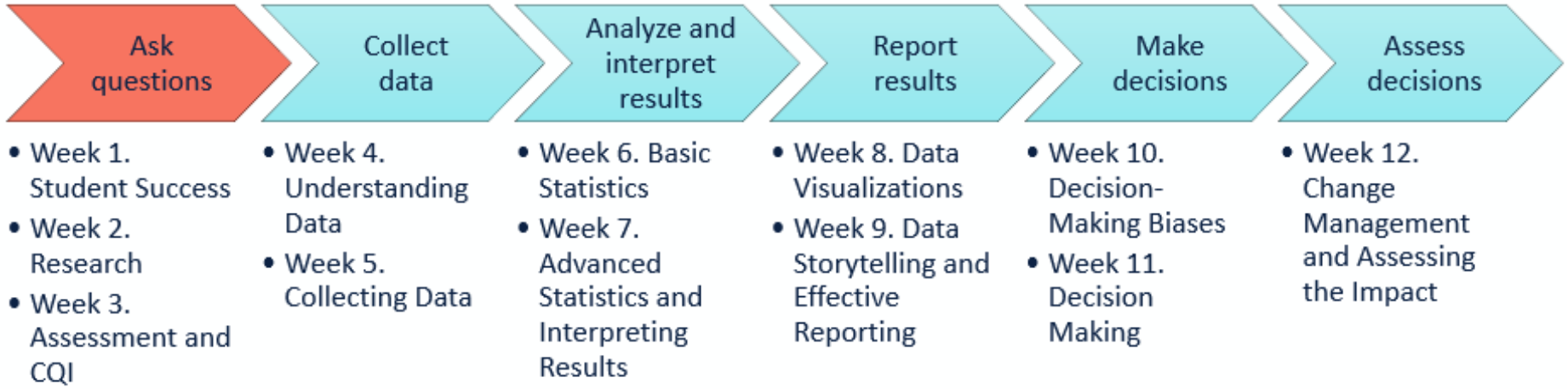
DLI Curriculum

Data-Informed Decision-Making Process
Data Literacy Institute: Timeline



air data & decisions® academy

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What were the outcomes?

- 60 Faculty and staff participated in DLI and earned their certificate of completion.
- 6 Research project starters were formed from the capstone projects.
- Cohort participants were invited to participate in advisory roles.

Be a strong supporter of student success by better understanding our students and student success issues.

Build a network of data literate colleagues by better understanding their roles/work

Improve data literacy skills (knowledge, skills, mindset, and habits).

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Where are we going from here?

- We are developing full research reports based on our DLI capstone projects in conjunction with our DLI advisory groups.
- We are leveraging the DLI curriculum to create Data Literacy 101 and 102 courses for on-boarding and training.
- We are expanding our data governance processes in response to the expertise provided by the DLI.

Capstone Projects During the Institute

Group Capstone Projects

- Explore a student success issue together
- Identify an area of improvement
- Draft a presentation & executive summary
- Learn the process to use in future projects
- Complete within 12 weeks of Institute

Fall Cohort

- Sophomore Retention
- Changing Majors
- Transfer Credit & Time-to-Degree

Spring Cohort

- Unpaid Account Balances
- EAB Navigate Alerts
- Pell Student Retention

Extending the Experience

- Extend capstone projects into full research studies led by IRDS.
- Invite DLI participants to serve in Advisory Groups.

Advisory Group

- See research through to completion
- Practice data literacy concepts covered in DLI

IRDS

- Produce reports & recommendations on campus-relevant topics
- Receive feedback that improves the research

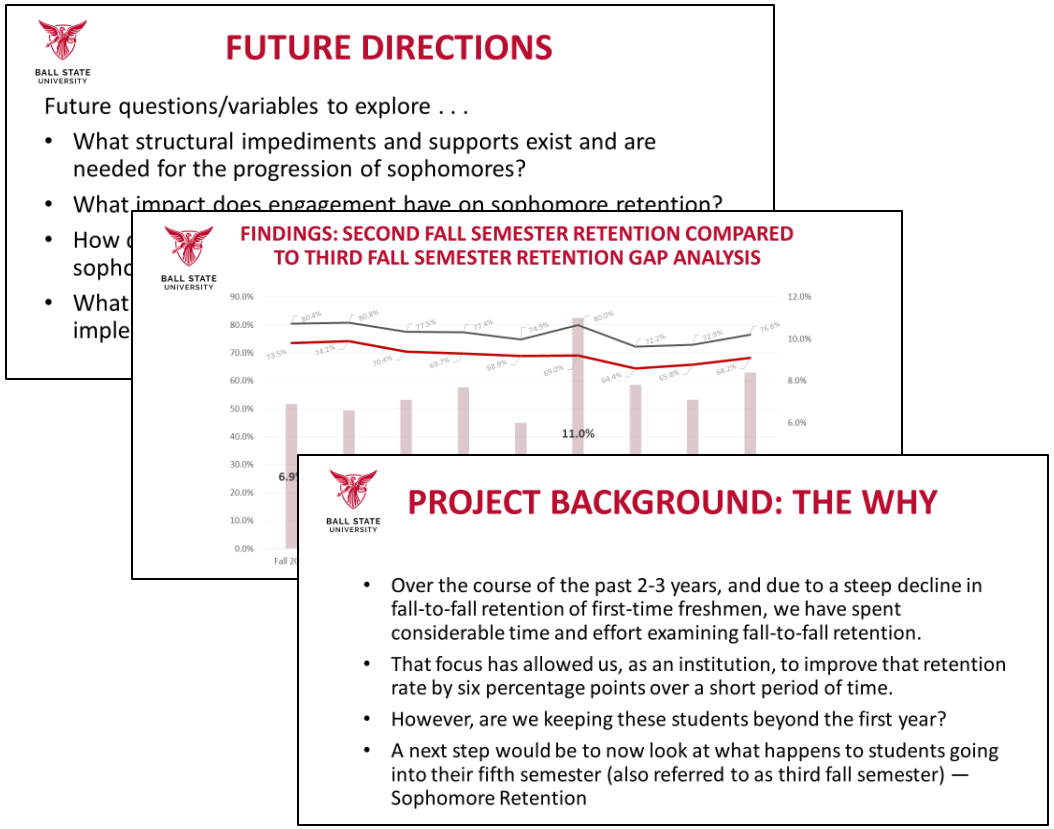
Role of Advisory Group

- Reviewing the Research Plan
- Sharing Expertise
- Participating in Sensemaking
- Reviewing Drafts

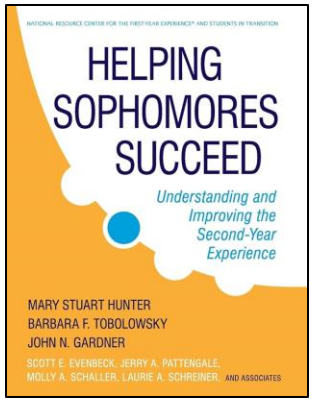
The Steps

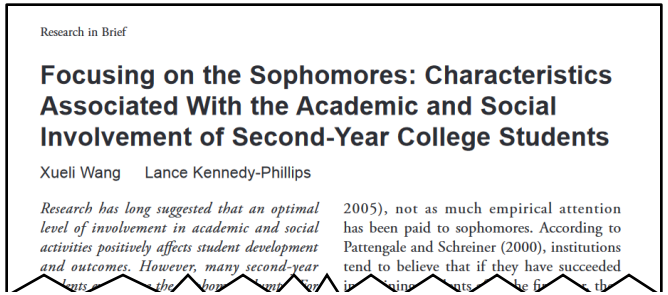
Walk through these Steps Using Sophomore Retention Project

Review



Scan



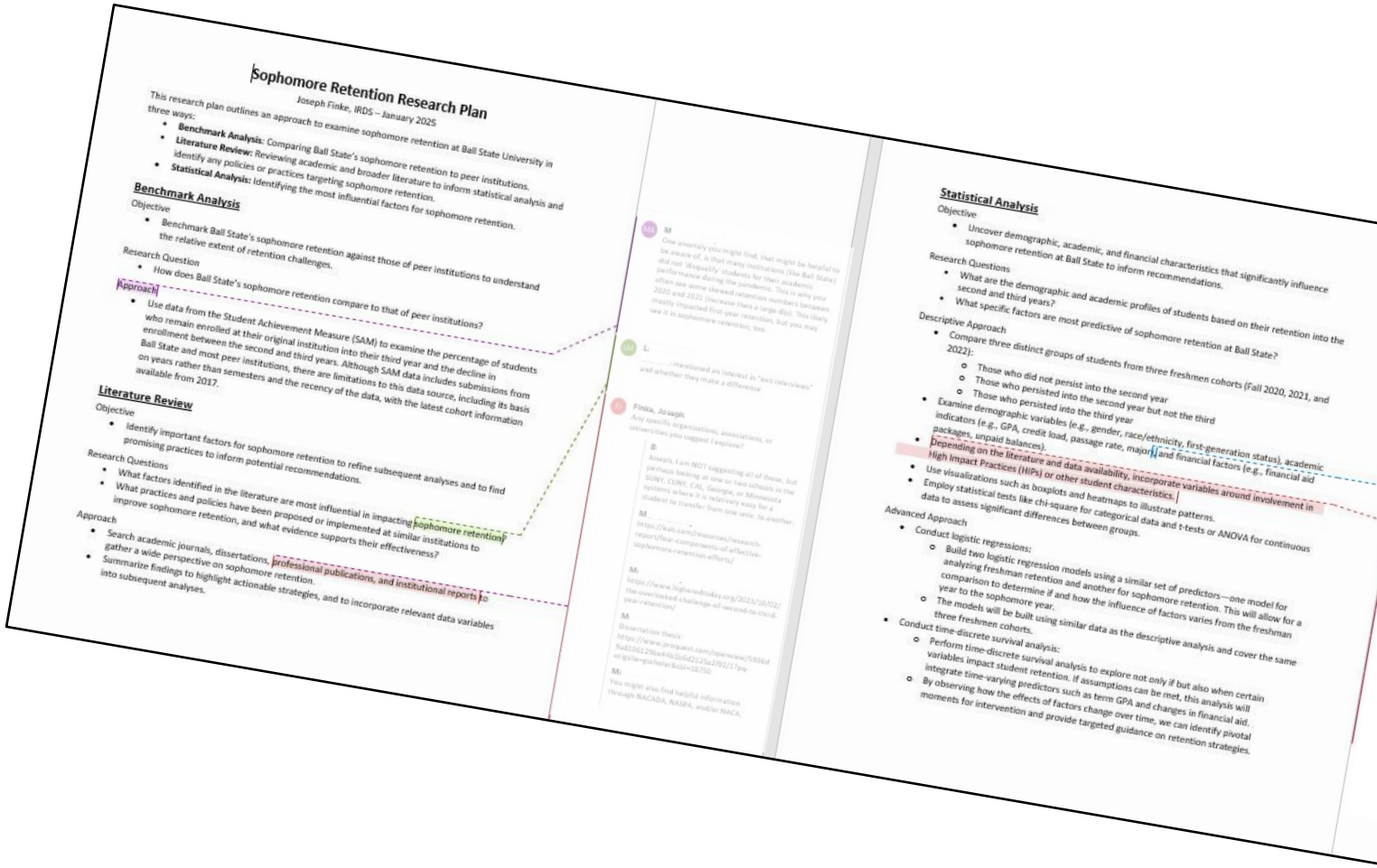


Sophomore Success Initiatives

Brainstorm

Two-Page Research Plan

- Research Questions
- Components
  - Benchmark Analysis
  - Literature Review
  - Statistical Analysis



Sophomore Retention Research Plan

Joseph Finke, IRDS – January 2025

This research plan outlines an approach to examine sophomore retention at Ball State University in three ways:

- **Benchmark Analysis:** Comparing Ball State's sophomore retention to peer institutions.
- **Literature Review:** Reviewing academic and broader literature to inform statistical analysis and identify any policies or practices targeting sophomore retention.
- **Statistical Analysis:** Identifying the most influential factors for sophomore retention.

Benchmark Analysis

Objective

- Benchmark Ball State's sophomore retention against those of peer institutions to understand the relative extent of retention challenges.

Research Question

- How does Ball State's sophomore retention compare to that of peer institutions?

Approach

- Use data from the Student Achievement Measure (SAM) to examine the percentage of students who remain enrolled at their original institution into their third year and the decline in enrollment between the second and third years. Although SAM data includes submissions from Ball State and most peer institutions, there are limitations to this data source, including its basis on years rather than semesters and the recency of the data, with the latest cohort information available from 2017.

Literature Review

Objective

- Identify important factors for sophomore retention to refine subsequent analyses and to find promising practices to inform potential recommendations.

Research Questions

- What factors identified in the literature are most influential in impacting sophomore retention?
- What practices and policies have been proposed or implemented at similar institutions to improve sophomore retention, and what evidence supports their effectiveness?

Approach

- Search academic journals, dissertations, professional publications, and institutional reports to gather a wide perspective on sophomore retention.
- Summarize findings to highlight actionable strategies, and to incorporate relevant data variables into subsequent analyses.

Statistical Analysis

Objective

- Uncover demographic, academic, and financial characteristics that significantly influence sophomore retention at Ball State to inform recommendations.

Research Questions

- What are the demographic and academic profiles of students based on their retention into the second and third years?
- What specific factors are most predictive of sophomore retention at Ball State?

Descriptive Approach

- Compare three distinct groups of students from three freshmen cohorts (Fall 2020, 2021, and 2022):
  - Those who did not persist into the second year
  - Those who persisted into the second year but not the third
  - Those who persisted into the third year
- Examine demographic variables (e.g., gender, race/ethnicity, first-generation status), academic indicators (e.g., GPA, credit load, passage rate, major), and financial factors (e.g., financial aid packages, unpaid balances).
- Depending on the literature and data availability, incorporate variables around involvement in High Impact Practices (HIPs) or other student characteristics.
- Use visualizations such as boxplots and heatmaps to illustrate patterns.
- Employ statistical tests like chi-square for categorical data and t-tests or ANOVA for continuous data to assess significant differences between groups.

Advanced Approach

- Conduct logistic regressions:
  - Build two logistic regression models using a similar set of predictors—one model for analyzing freshman retention and another for sophomore retention. This will allow for a comparison to determine if and how the influence of factors varies from the freshman year to the sophomore year.
  - The models will be built using similar data as the descriptive analysis and cover the same three freshmen cohorts.
- Conduct time-discrete survival analysis:
  - Perform time-discrete survival analysis to explore not only if but also when certain variables impact student retention. If assumptions can be met, this analysis will integrate time-varying predictors such as term GPA and changes in financial aid.
  - By observing how the effects of factors change over time, we can identify pivotal moments for intervention and provide targeted guidance on retention strategies.

DLI Topics ⋙ Advisory Group

- Research Questions
- Student Success Gaps
- Data Types and Sources

Feedback ⋙ IRDS

- Variable Suggestions
- Literature and Resources

Review, Scan, & Brainstorm → Draft Research Plan → **Conduct Analysis** → Draft Initial Findings → Revise Analysis → Draft Products → Disseminate

Review (Conduct Analysis) · Review (Draft Initial Findings) · Review (Draft Products)

Benchmark Analysis

Literature Review

Statistical Analysis

Review, Scan, & Brainstorm | Draft Research Plan | Conduct Analysis | **Draft Initial Findings** | Revise Analysis | Draft Products | Disseminate

Review | Review | Review

Designed Presentation to Allow for Optional Exploration

Created a Presentation of Findings with Tables and Data Visualization

Recorded a Video Version

DLI Topics » Advisory Group

- Basic & Advanced Statistics
- Interpretation of Results
- Data Visualizations

Feedback » IRDS

- Visualization & Framing Clarification
- Pell-Eligibility Non-Significance in Model
- Overlapping Variables

Review, Scan, & Brainstorm → Draft Research Plan → Conduct Analysis → Draft Initial Findings → **Revise Analysis** → Draft Products → Disseminate

Review (Draft Research Plan)

Review (Draft Initial Findings)

Review (Draft Products)

Model Refinement

Follow-Up Analysis

Sensitivity Analysis

50+ Slides of Findings

15-Minute Presentation Version

Research Brief

Blog Post

DLI Topics » Advisory Group

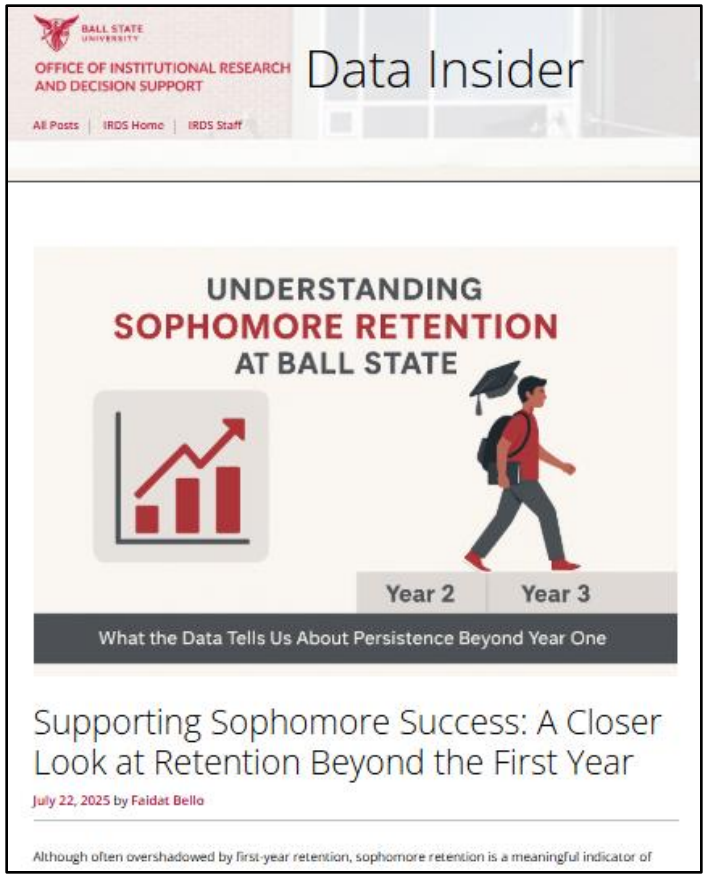
- Data Storytelling
- Effective Reporting
- Linking Findings to Decisions

Feedback » IRDS

- Key Findings Identification
- Recommendations Refinement

Review, Scan, & Brainstorm → Draft Research Plan → Conduct Analysis → Draft Initial Findings → Revise Analysis → Draft Products → **Disseminate**

Review (Draft Research Plan) · Review (Draft Initial Findings) · Review (Draft Products)



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OFFICE OF INSTITUTIONAL RESEARCH AND DECISION SUPPORT

Data Insider

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UNDERSTANDING
SOPHOMORE RETENTION
AT BALL STATE

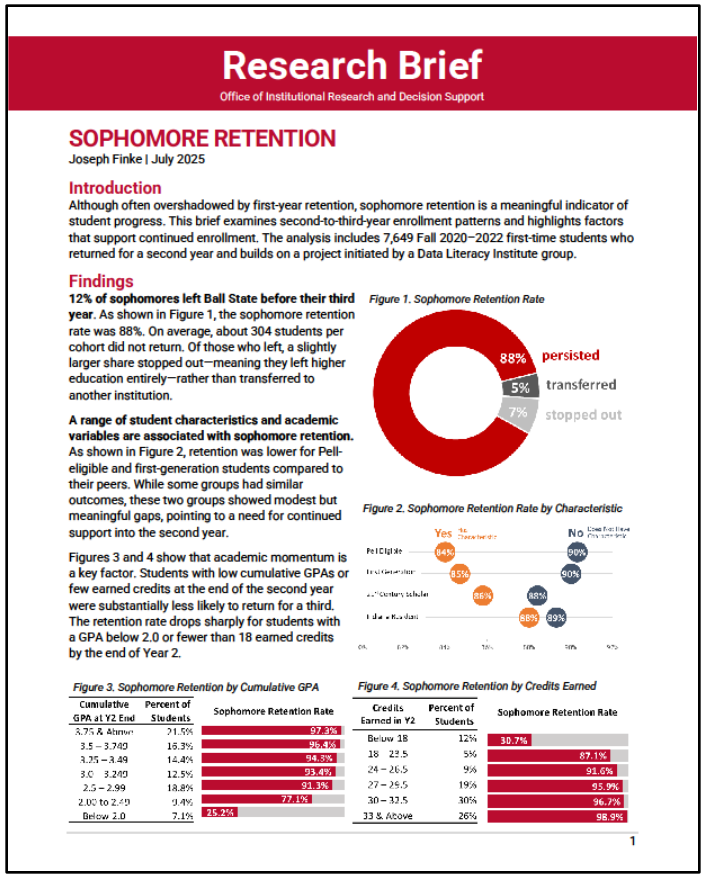
Year 2 Year 3

What the Data Tells Us About Persistence Beyond Year One

Supporting Sophomore Success: A Closer Look at Retention Beyond the First Year

July 22, 2025 by Faidat Bello

Although often overshadowed by first-year retention, sophomore retention is a meaningful indicator of



Research Brief

Office of Institutional Research and Decision Support

SOPHOMORE RETENTION

Joseph Finke | July 2025

Introduction

Although often overshadowed by first-year retention, sophomore retention is a meaningful indicator of student progress. This brief examines second-to-third-year enrollment patterns and highlights factors that support continued enrollment. The analysis includes 7,649 Fall 2020–2022 first-time students who returned for a second year and builds on a project initiated by a Data Literacy Institute group.

Findings

12% of sophomores left Ball State before their third year. As shown in Figure 1, the sophomore retention rate was 88%. On average, about 304 students per cohort did not return. Of those who left, a slightly larger share stopped out—meaning they left higher education entirely—rather than transferred to another institution.

Figure 1. Sophomore Retention Rate

88% persisted
5% transferred
7% stopped out

A range of student characteristics and academic variables are associated with sophomore retention. As shown in Figure 2, retention was lower for Pell-eligible and first-generation students compared to their peers. While some groups had similar outcomes, these two groups showed modest but meaningful gaps, pointing to a need for continued support into the second year.

Figure 2. Sophomore Retention Rate by Characteristic

Yes No

Figures 3 and 4 show that academic momentum is a key factor. Students with low cumulative GPAs or few earned credits at the end of the second year were substantially less likely to return for a third. The retention rate drops sharply for students with a GPA below 2.0 or fewer than 18 earned credits by the end of Year 2.

Figure 3. Sophomore Retention by Cumulative GPA

Cumulative GPA at Y2 End	Percent of Students	Sophomore Retention Rate
3.75 & Above	21.5%	97.9%
3.5 – 3.749	16.3%	96.4%
3.25 – 3.49	14.4%	94.8%
3.0 – 3.249	12.5%	93.4%
2.5 – 2.99	18.8%	91.3%
2.00 to 2.49	9.4%	77.1%
Below 2.0	7.1%	25.2%

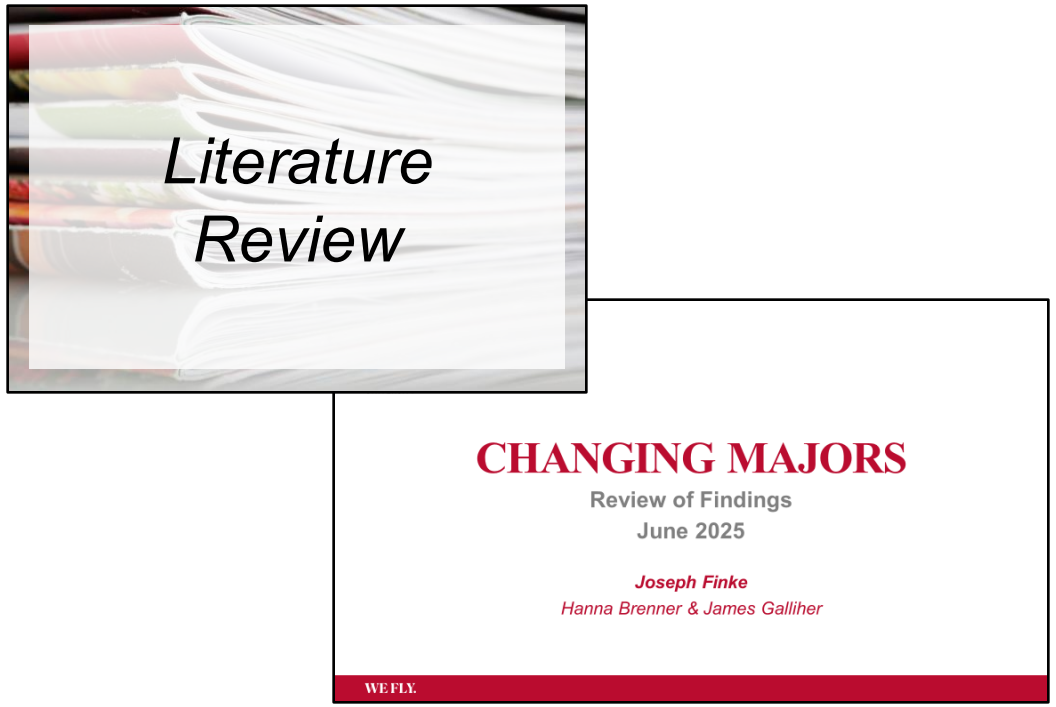
Figure 4. Sophomore Retention by Credits Earned

Credits Earned in Y2	Percent of Students	Sophomore Retention Rate
Below 18	12%	30.7%
18 – 23.5	5%	87.1%
24 – 26.5	9%	91.6%
27 – 29.5	19%	95.9%
30 – 32.5	30%	96.7%
33 & Above	26%	98.9%

1

Added Benefits of Extension Projects

Involving Graduate Interns



Strengthening Relationships

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Tailoring the DLI Curriculum to Our Campus Context

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DLI's format - limitations for our campus

AIR DLI experience

- Cohort of 30
- Mostly volunteers or small teams
- Full semester, 2 hours a week
- Synchronous instruction
- In depth coverage of several topics
- Applicable in any institutional context

Potential Limitations

- About 3,300 BSU employees
- Coalition of the willing
- High level of commitment
- Scheduling challenges
- Learning requires effort
- Relying on learner to connect their learning directly to their role

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Features needed to combat limitations

Potential Limitations

- About 3,300 BSU employees
- Coalition of the willing
- High level of commitment
- Scheduling challenges
- Learning requires time/effort
- Relying on learner to connect their learning directly to their role

Solutions to limitations

- Scalable
- Easier to require of staff
- Low strain on resources (time)
- Flexible/Asynchronous
- Truncated and introductory
- Explicit about BSU applications

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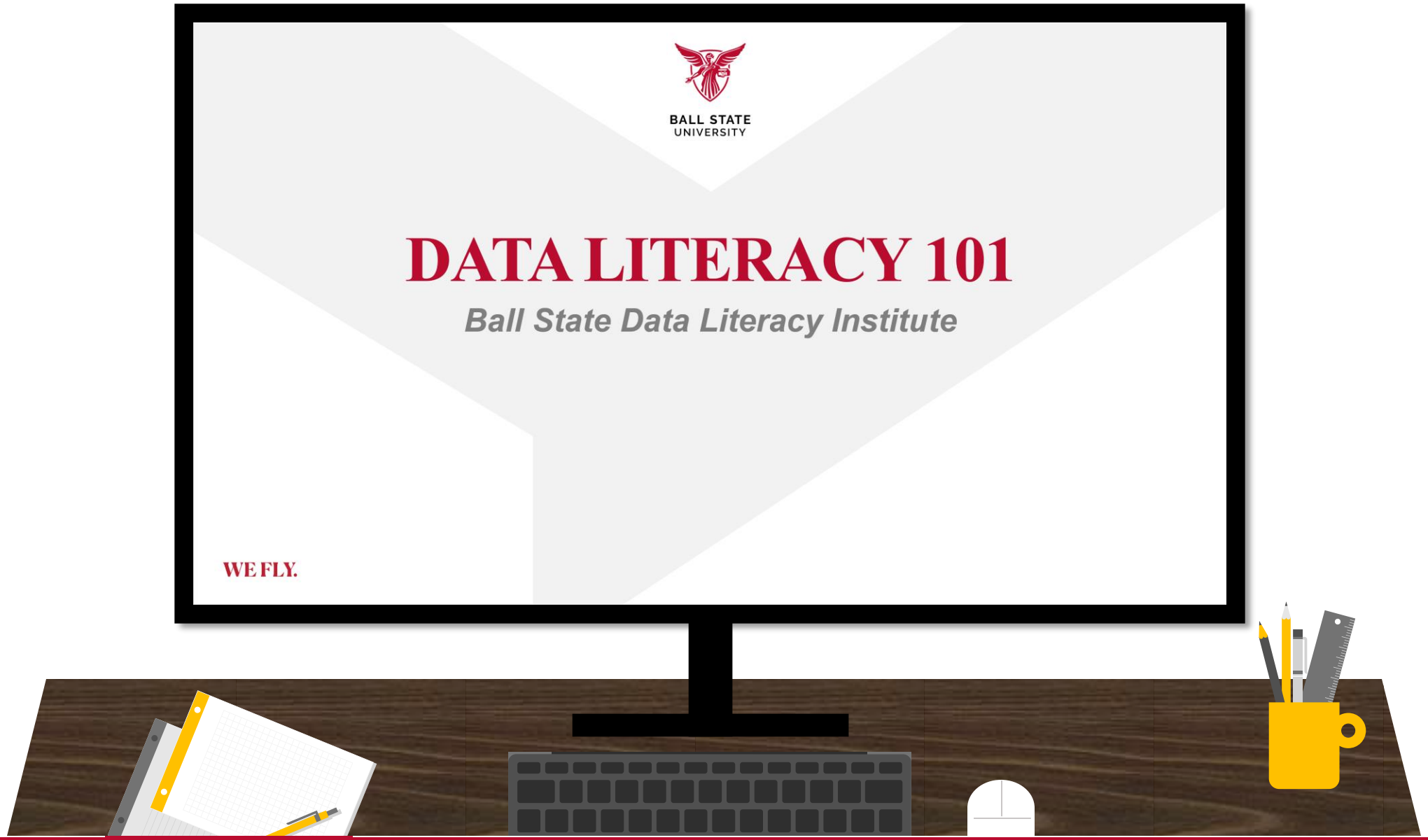

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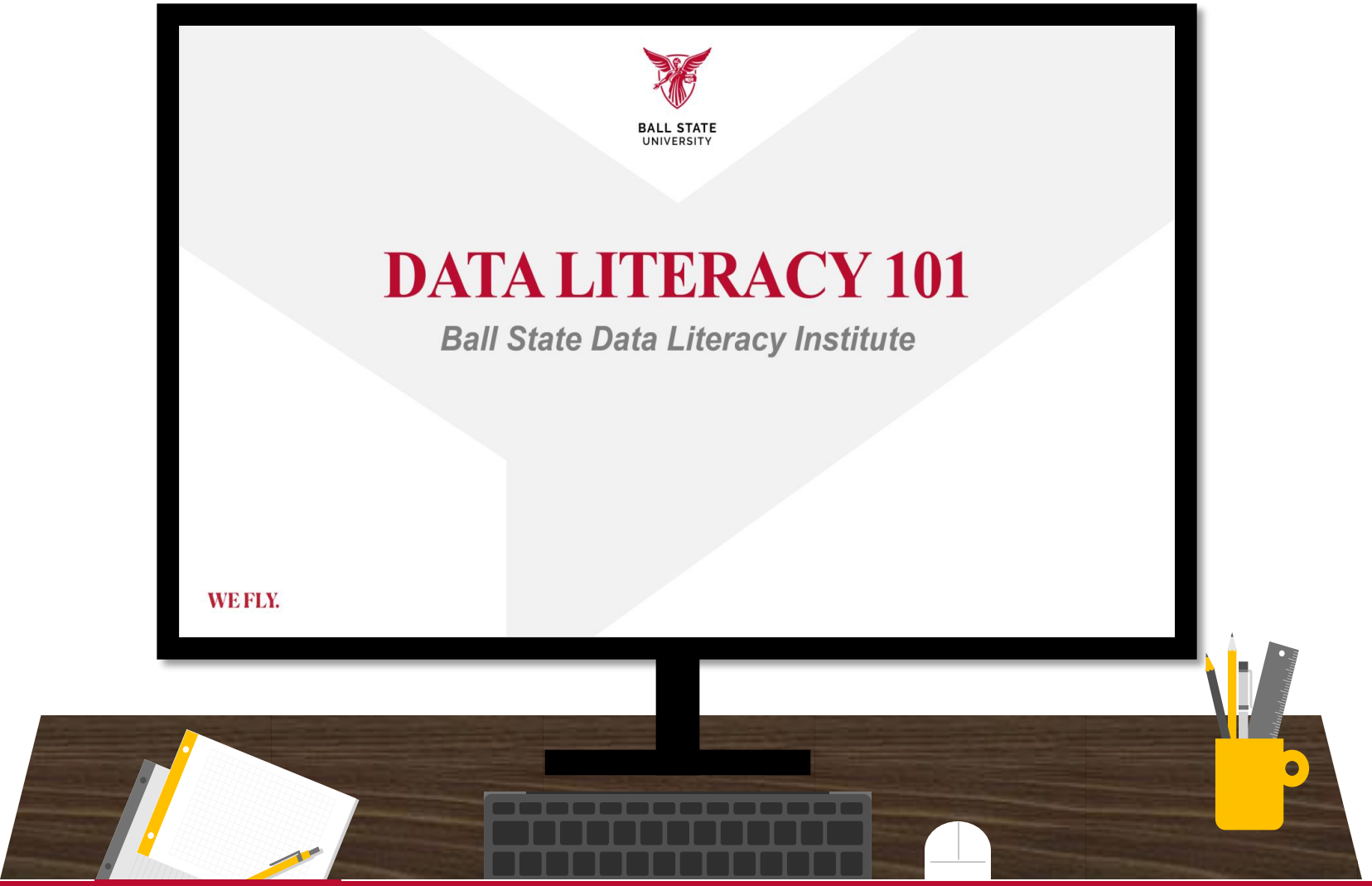

What is it?

- A one-session seminar on data literacy basics
- Built to cater to Ball State's data ecosystem
- Designed for those new to the institution, but rolled out to all
- Available in many formats, including a recorded webinar via Udemy
- Takes the themes of the AIR DLI and applies them directly to BSU contexts
- Part of a series of webinars that we are developing using the licensed AIR DLI content

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Data Literacy 101 – Topics & Goals

Topics

- Why data literacy? (Theory)
- Seriously, why data literacy? (Practical)
- Data literacy defined
- How is data created, refined, and managed at BSU?
- How is data used at BSU?
- What about me?

Goals for participants

- Data literacy is important at BSU
- Data literacy is important *in my role*
- "Do I fit the definition of data literate?"
- Understand context surrounding the data ecosystem at BSU
- How data impacts my institution *tangibly*
- Consider next steps

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Data Literacy 101 – Successful Impressions

Data literacy **matters** (regardless of how "data literate" I currently am).

Our **data systems** are important (and more involved than I thought).

Our data is informing BSU **practices** (and can be used to inform my practice).

Offices like BSU's IR office are **here to help** (there is more to explore here – DL 102!).

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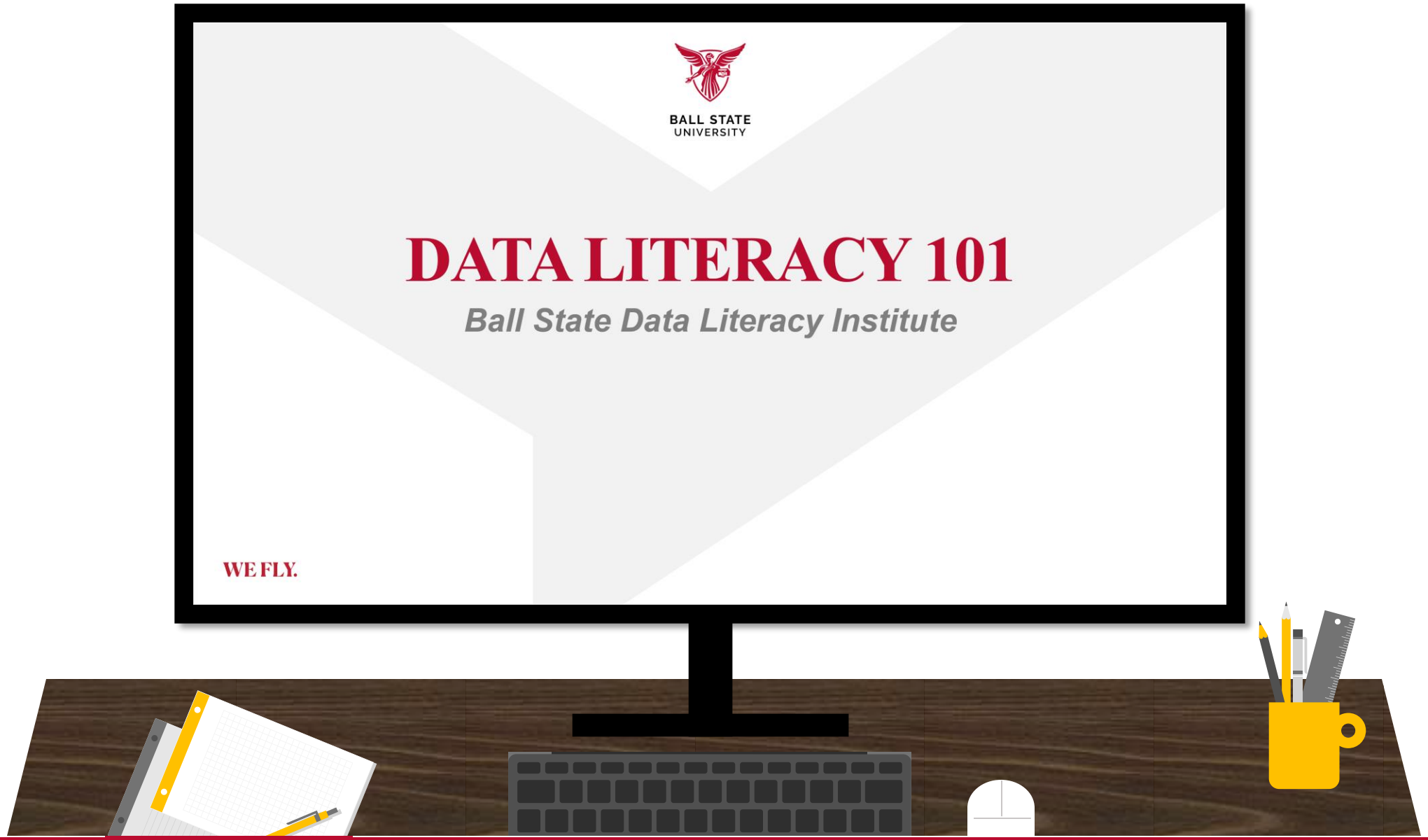

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How do we start? The Cycle of Assessment

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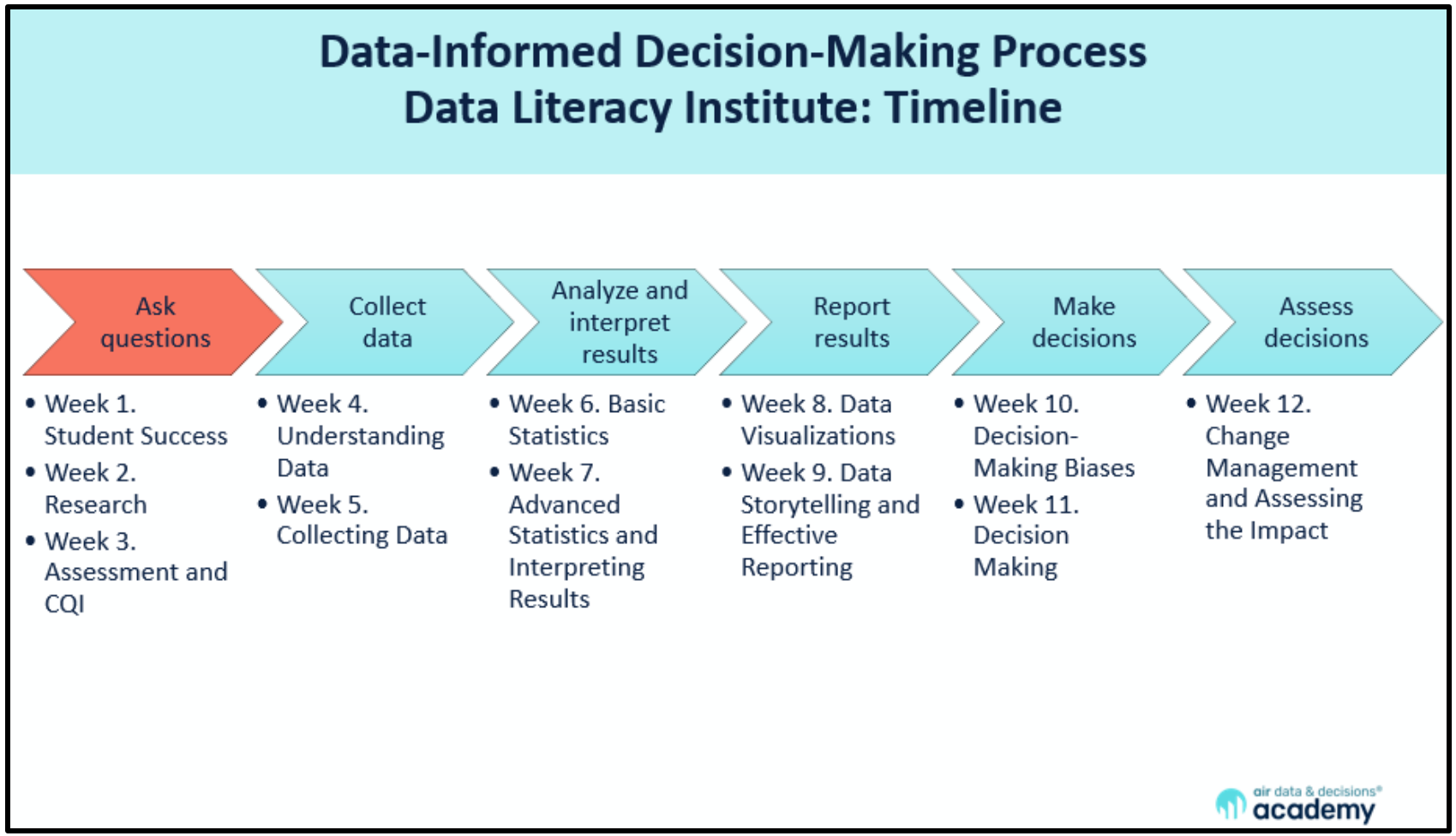

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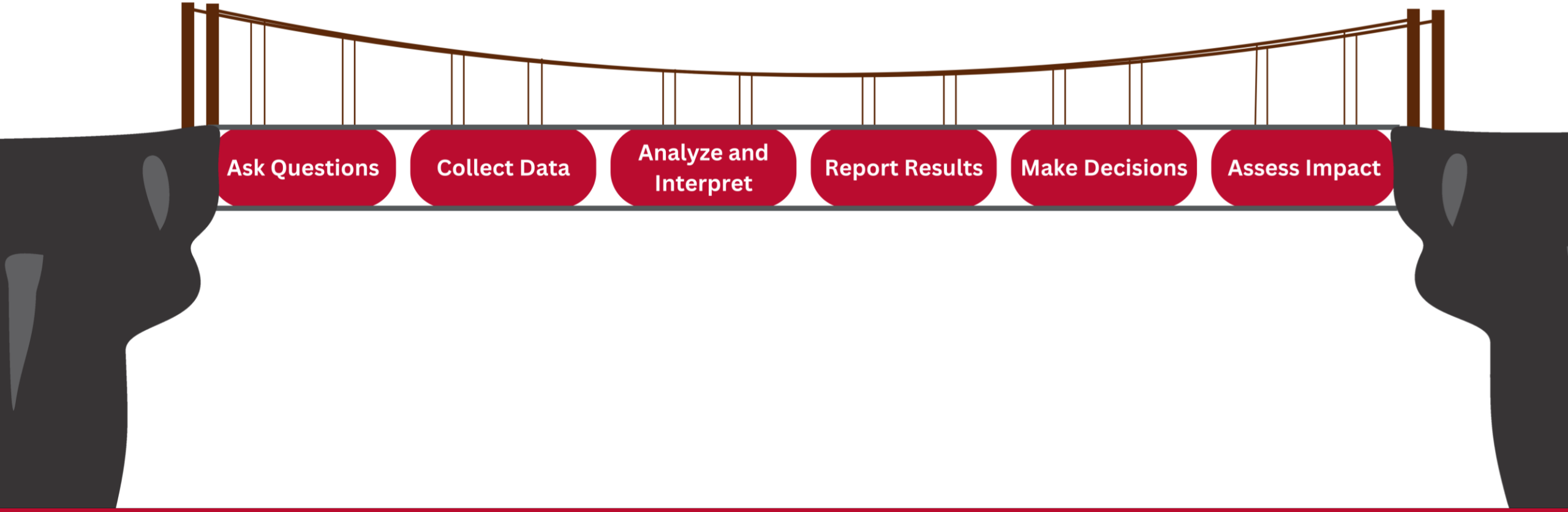
Cycle of Assessment: Bridging the Gap



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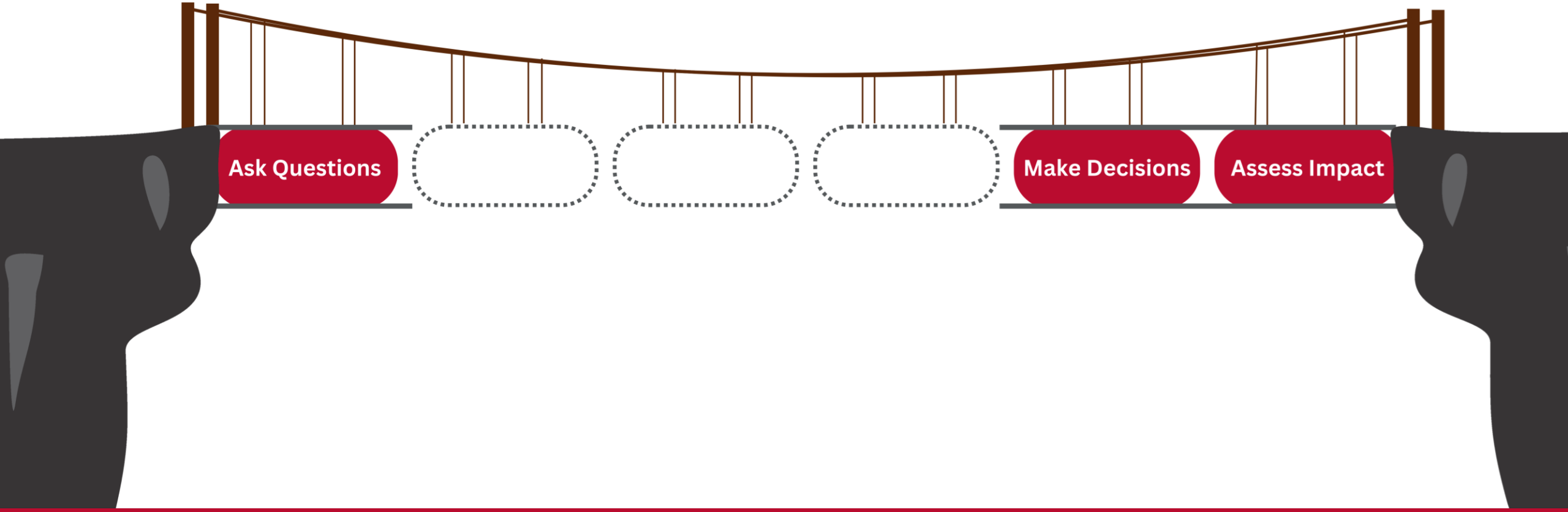
Cycle of Assessment: Bridging the Gap



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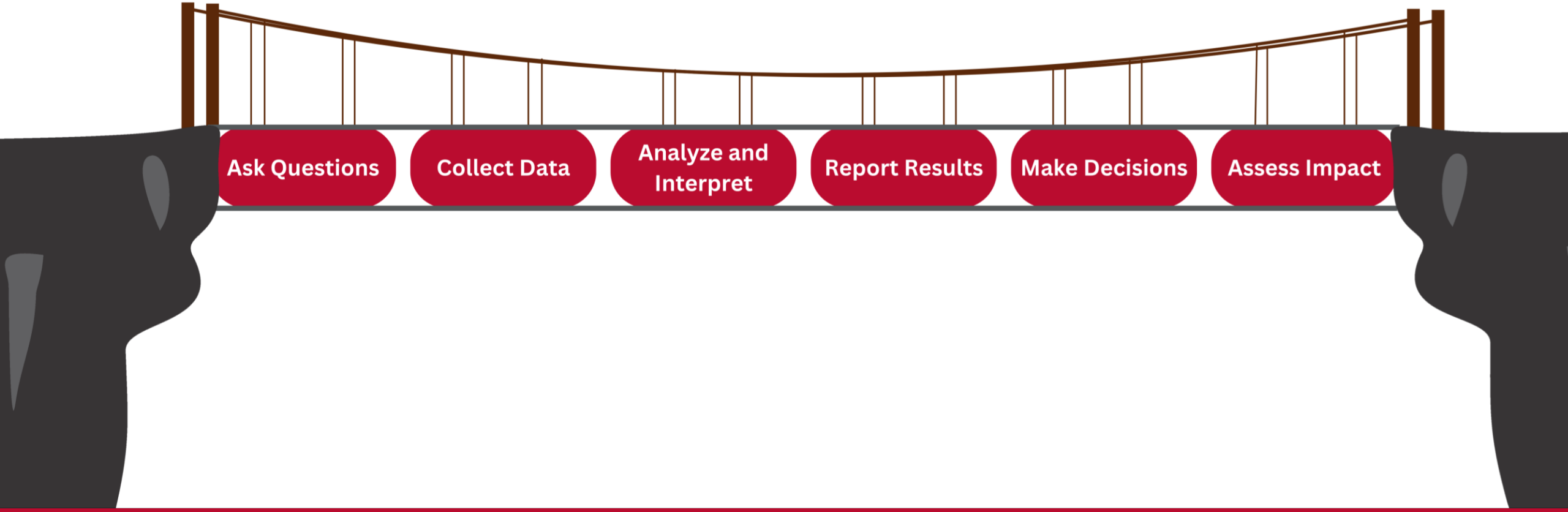
Cycle of Assessment: Bridging the Gap



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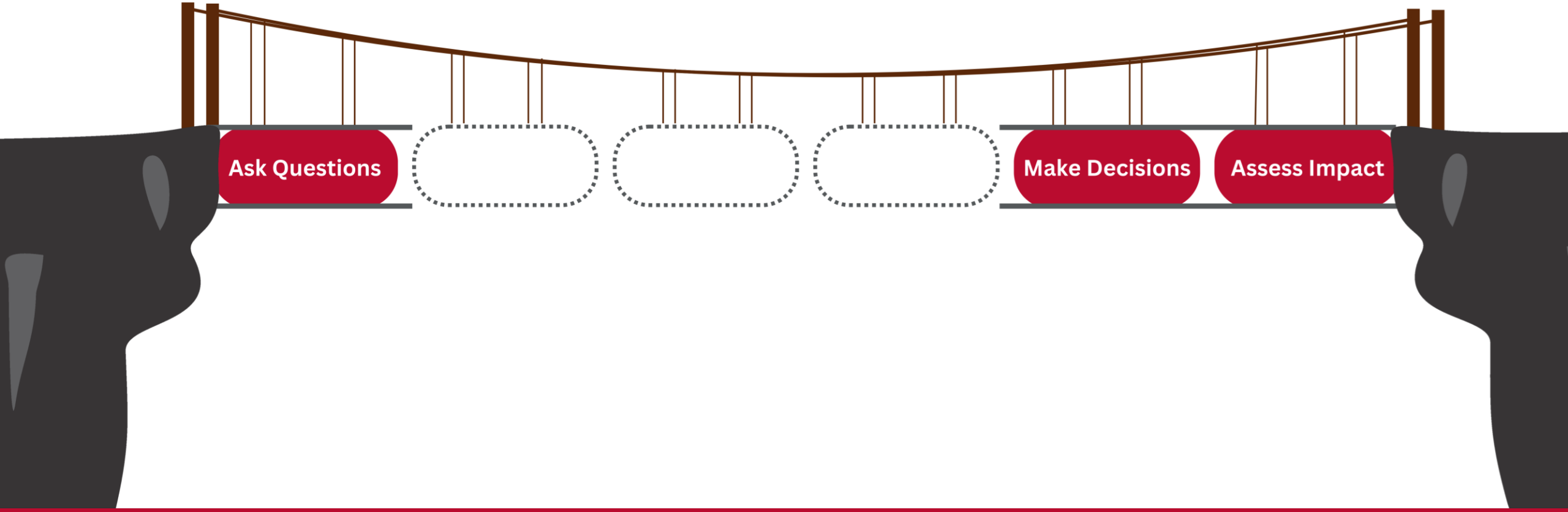
Cycle of Assessment: Bridging the Gap



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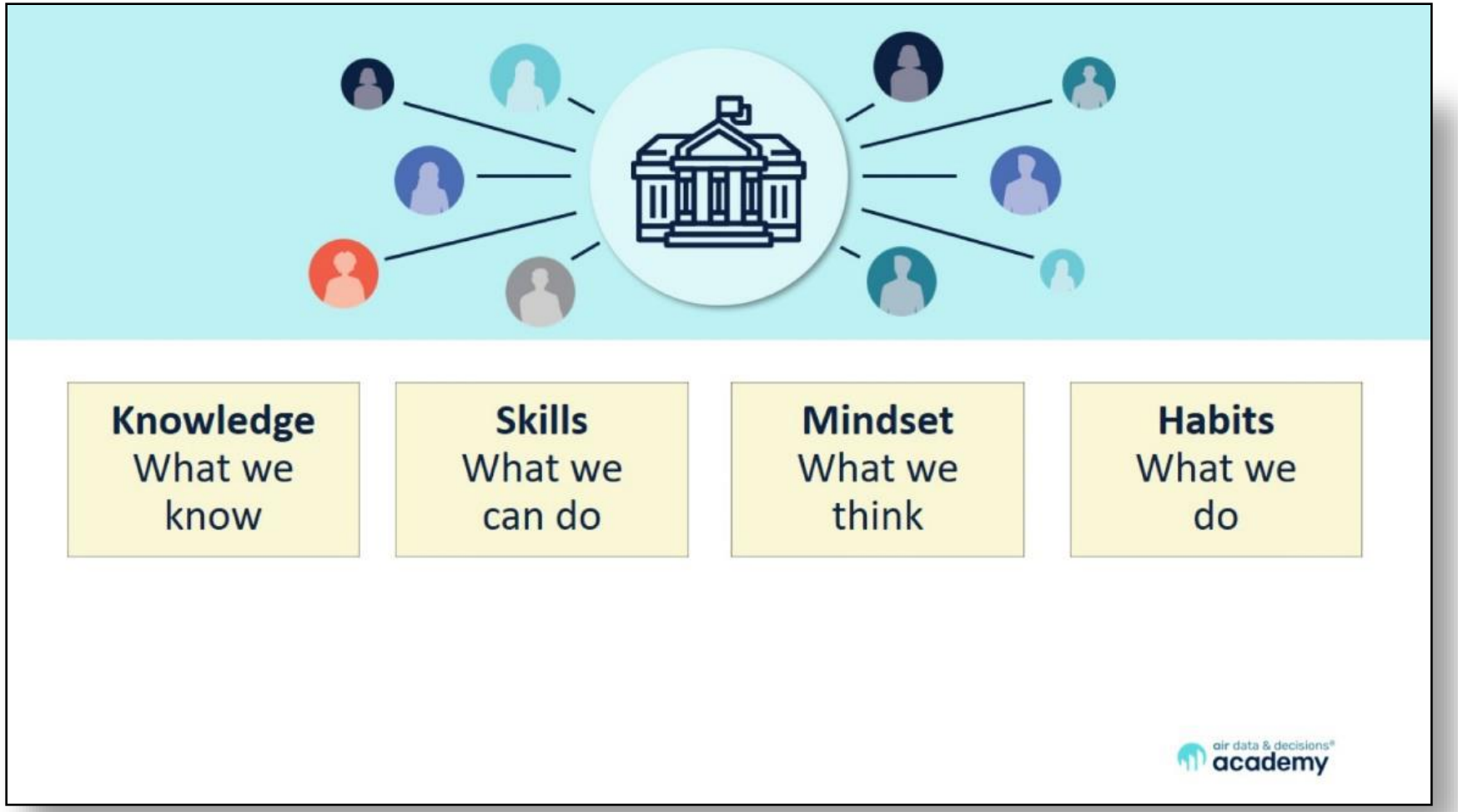
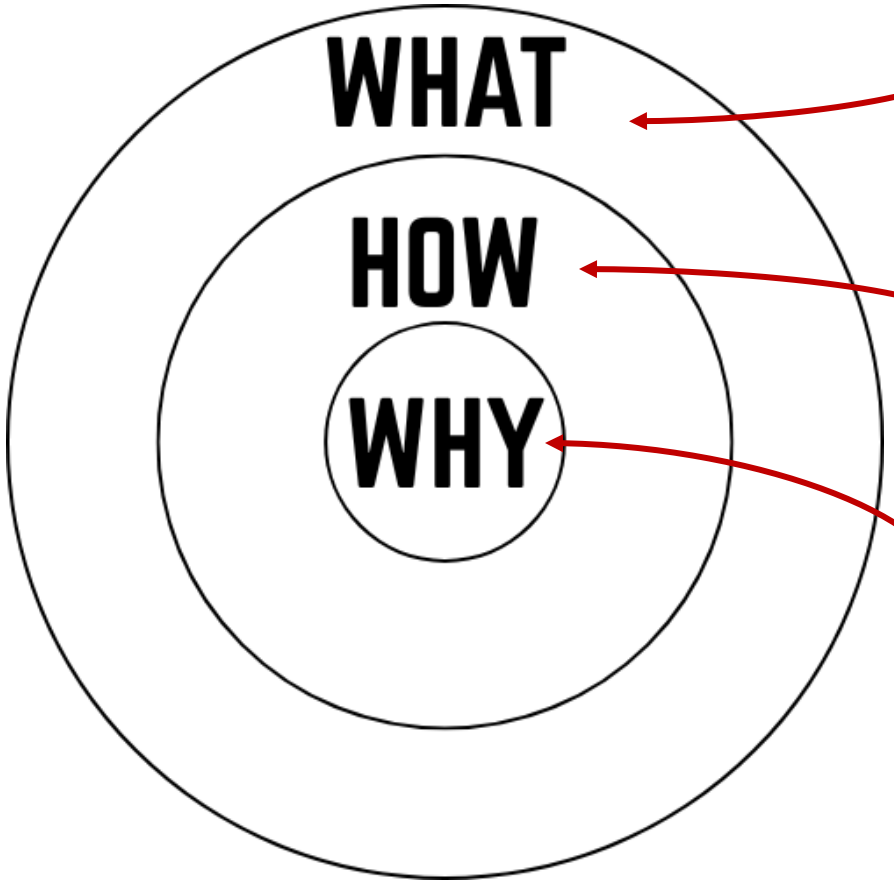
How do we frame “literacy?” AIR's Definition



How do we frame campus-wide data use?



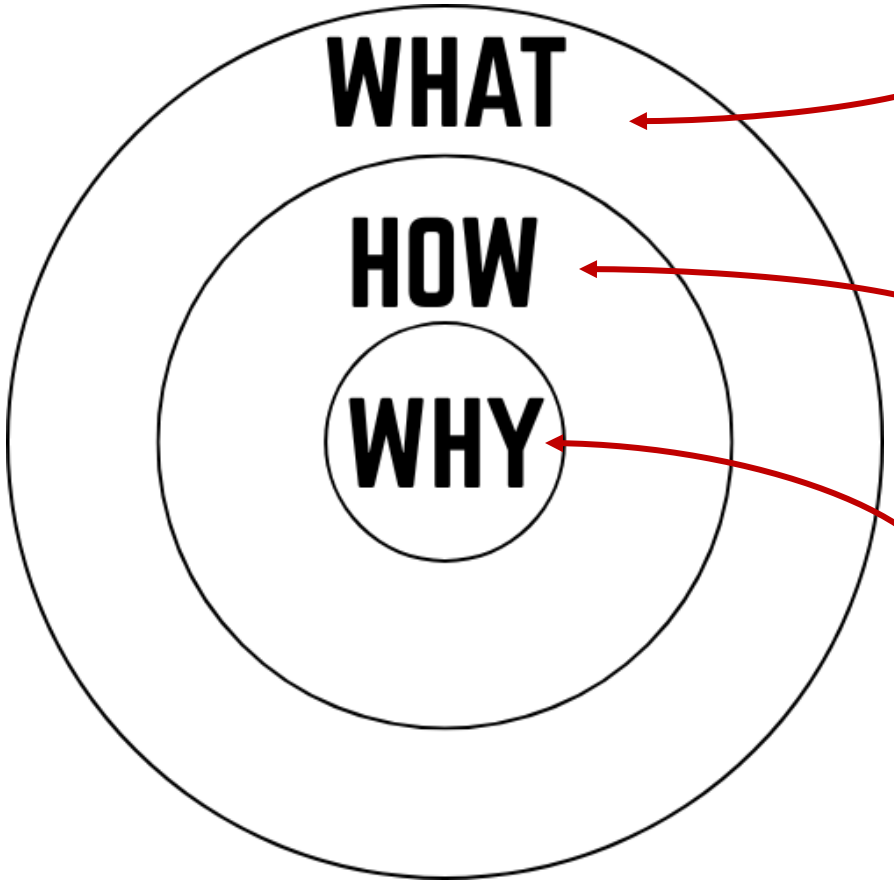
What are the contents of BSU data, and their surrounding context?

How do we manage, govern, analyze, interpret, communicate about, and practically use our data at BSU?

Why are we using this *particular* data (or any formal data at all)?

Golden Circle Source: Simon Sinek

How do we frame campus-wide data use?



What are the contents of BSU data, and their surrounding context?

Why are we using this *particular* data (or any formal data at all)?

Golden Circle Source: Simon Sinek

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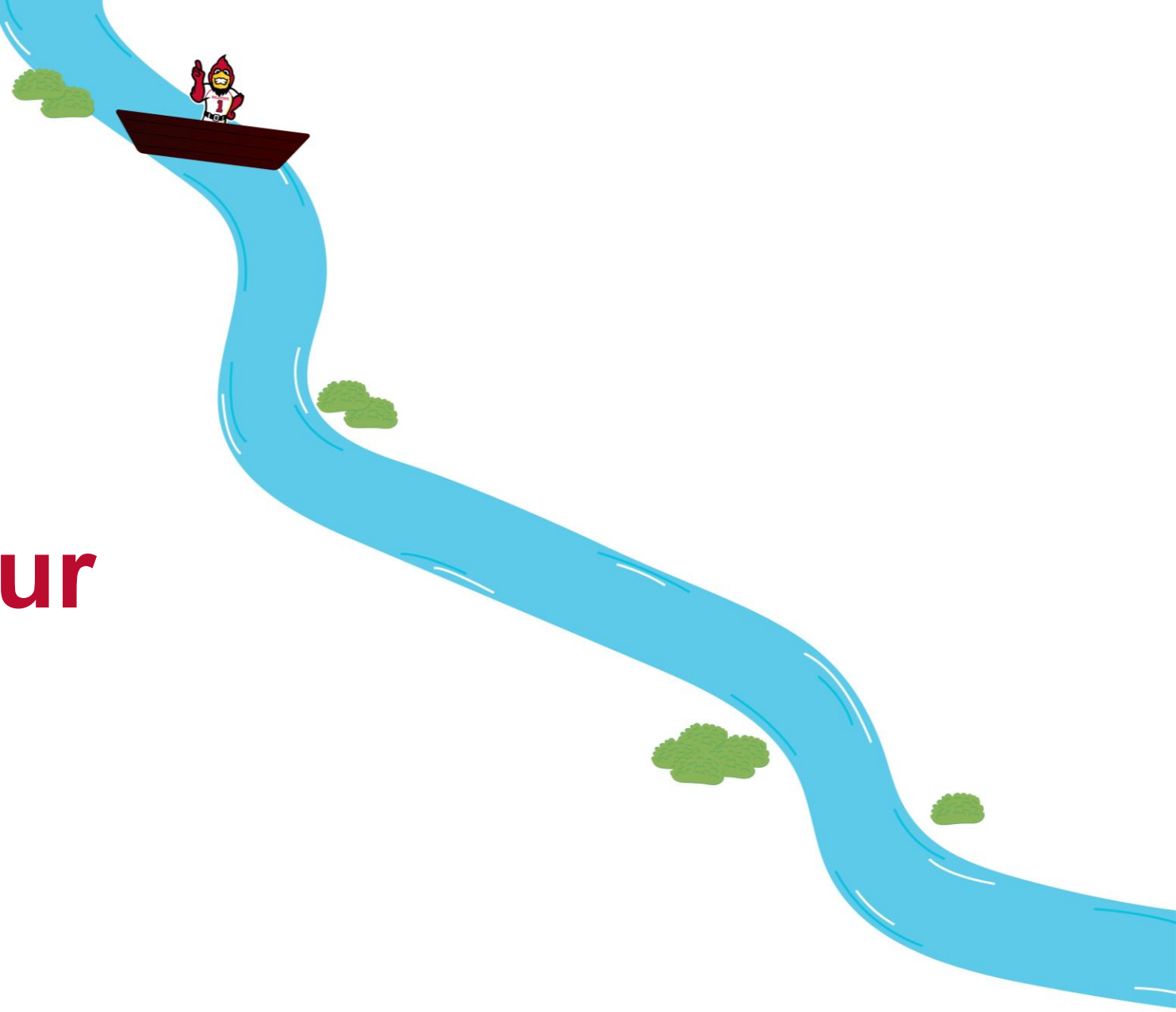
Explaining Our River of Data



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Data Creation

Application File

Transcripts

Campus Employment

Billing and Aid

Housing

Course Registration

Advising Notes

Academic Plan

Course Grades

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Data Creation

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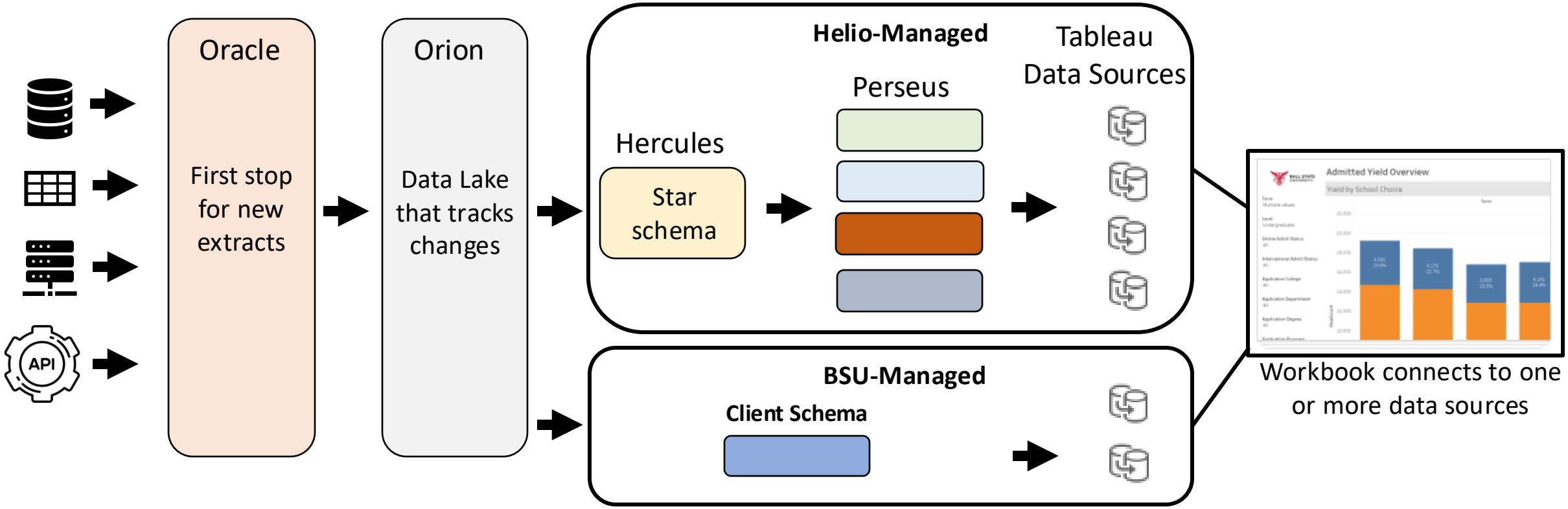
Turning raw data into intelligence



Workbook connects to one or more data sources

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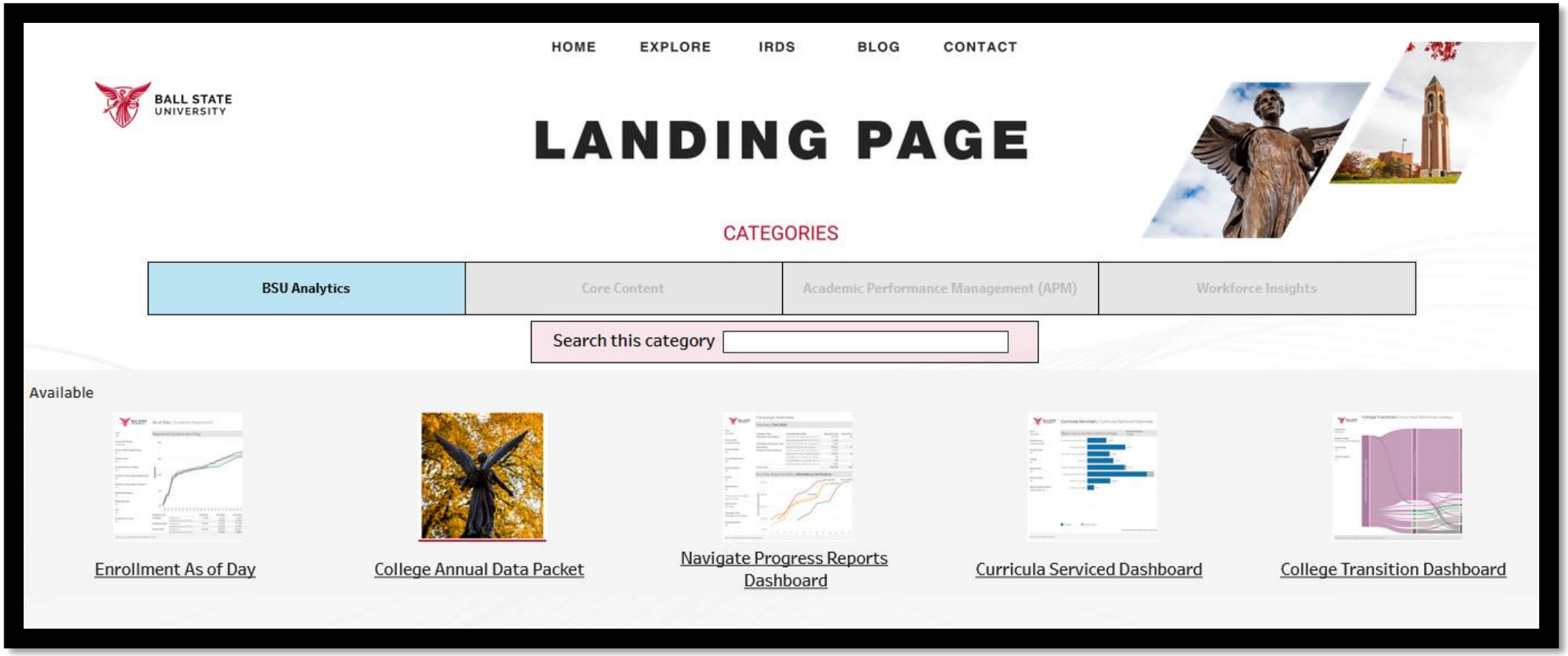
Data refined for the end-user



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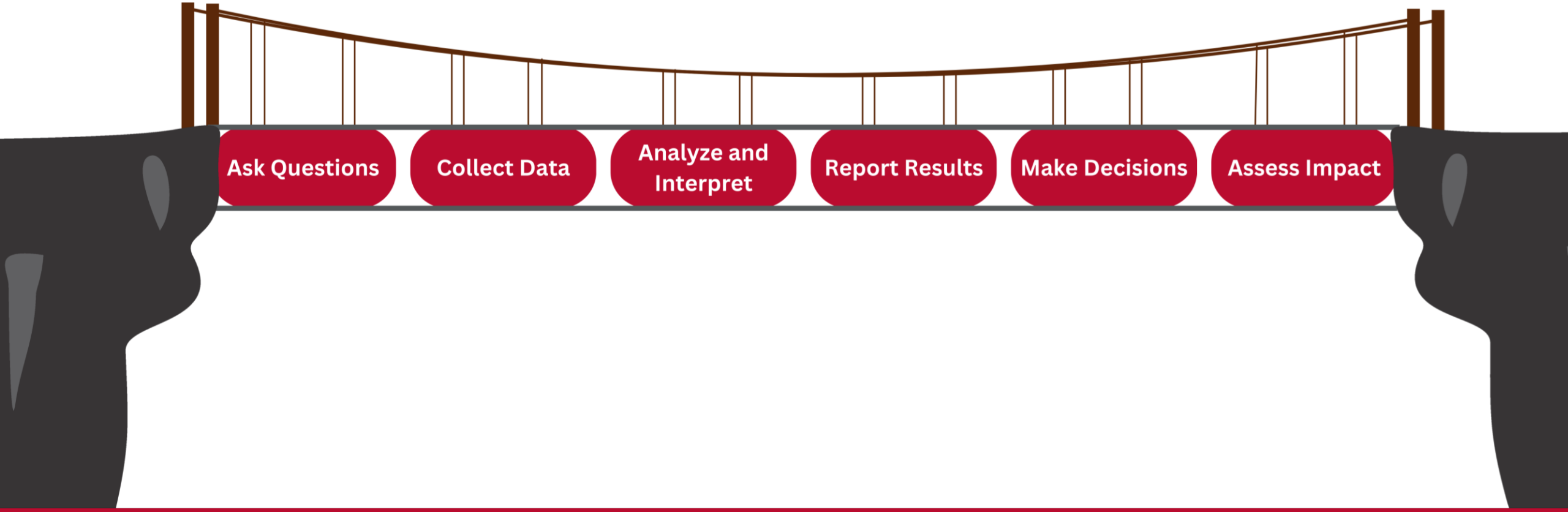
Cycling back to the cycle



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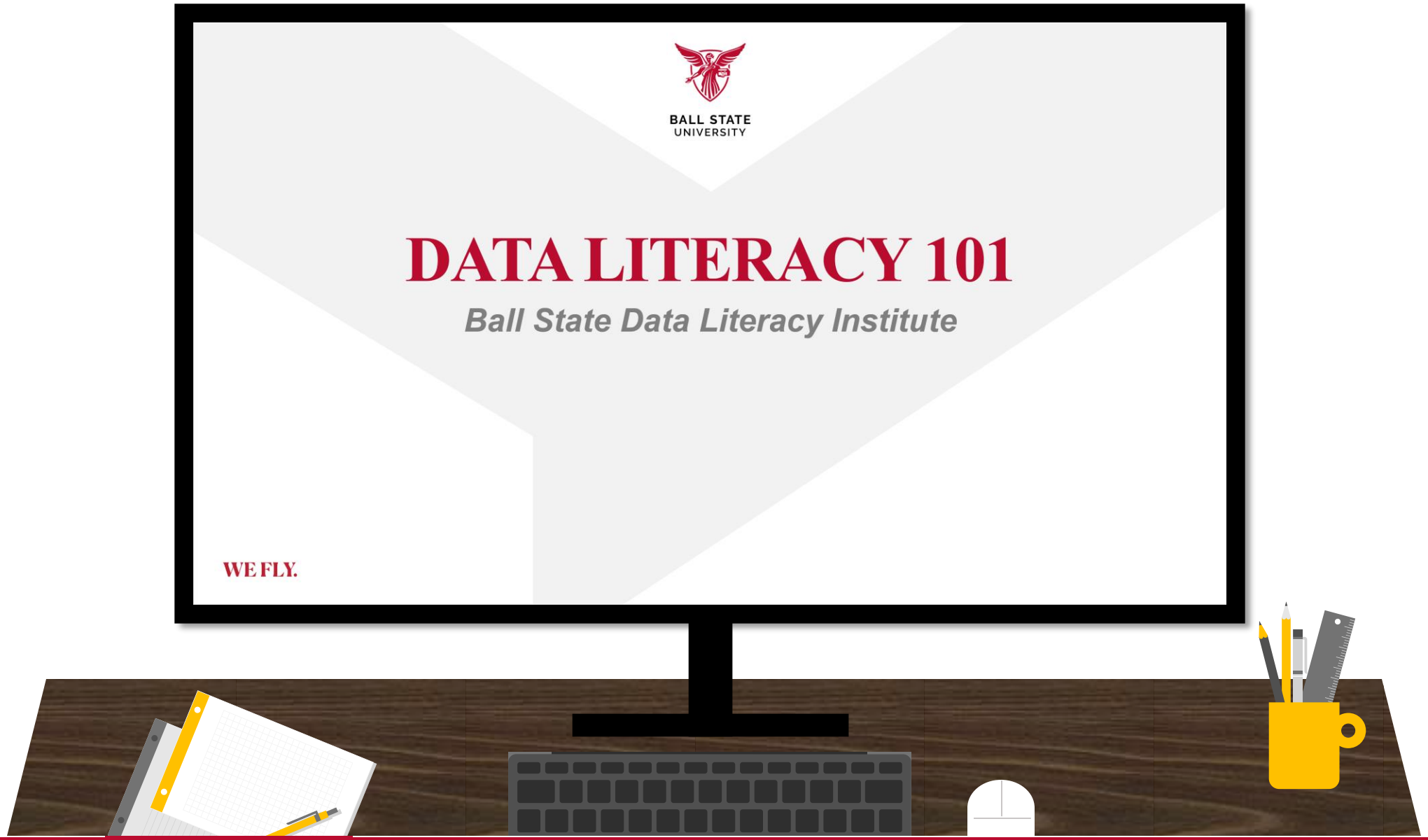

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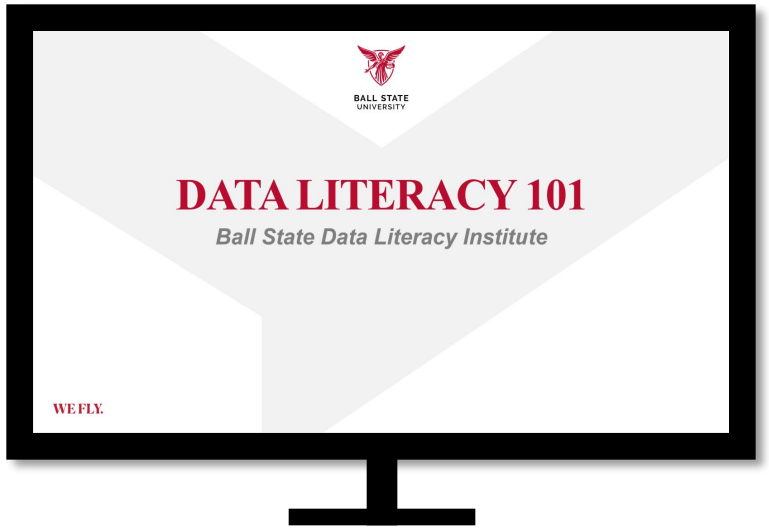
What's after 101/102?



Data Literacy 102

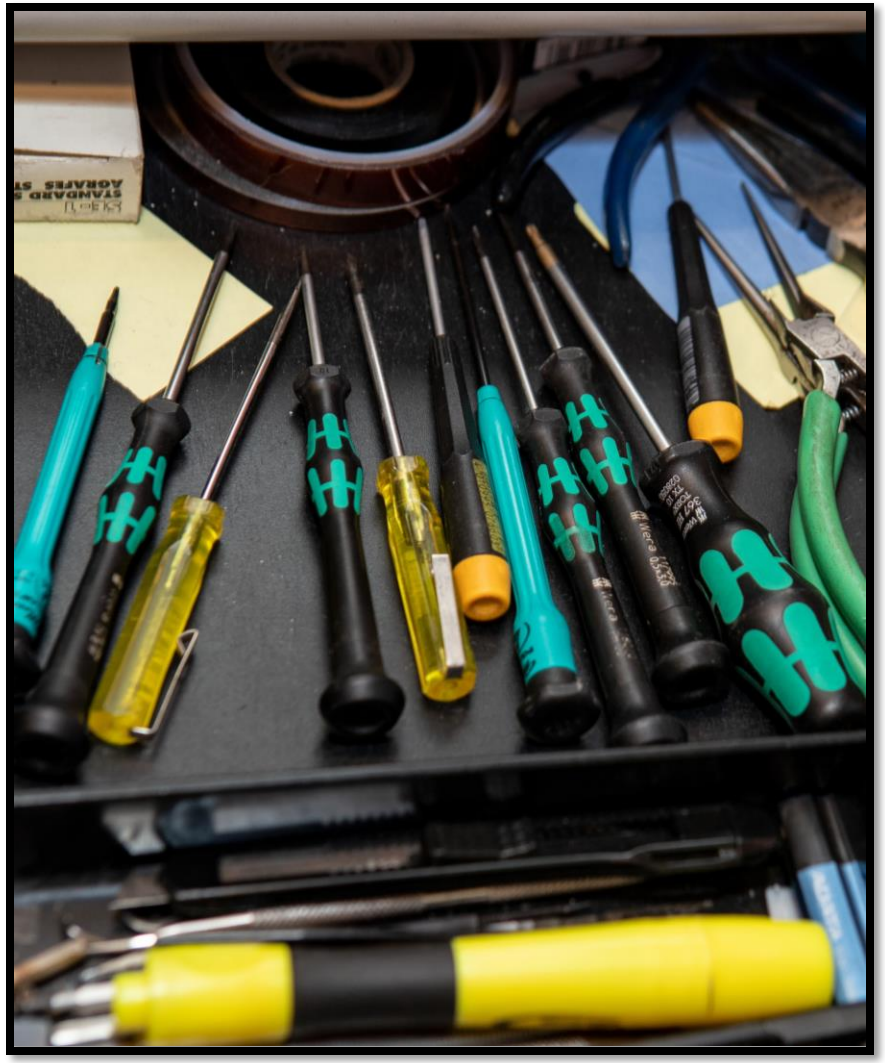
DL 201

DL 202

DL 203

Upcoming plans for 102

- **Move from** the overview of data use at BSU in DL 101
- **Move to** general data literacy theory and tools in 102
- Break down the cycle of assessment into each of its individual parts (similar to how the AIR DLI works)
- Implementing curriculum from the AIR DLI, such as…
    - Collecting and Understanding Data
    - Continuous Quality Improvement
    - Data Storytelling and Effective Reporting
    - Decision Making and Biases



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Longer Term Goals

- **Future courses** (201, 202, etc.) would be more focused, such as targeted data-related skill building
    - *Think things like data visualizations, specific applications (Excel, Tableau, etc.), useful basic statistics, reporting methods, etc.*

- We would also be interested in developing **area-specific data literacy content,** such as data literacy tailored to academic advising, faculty groups, admissions, etc.

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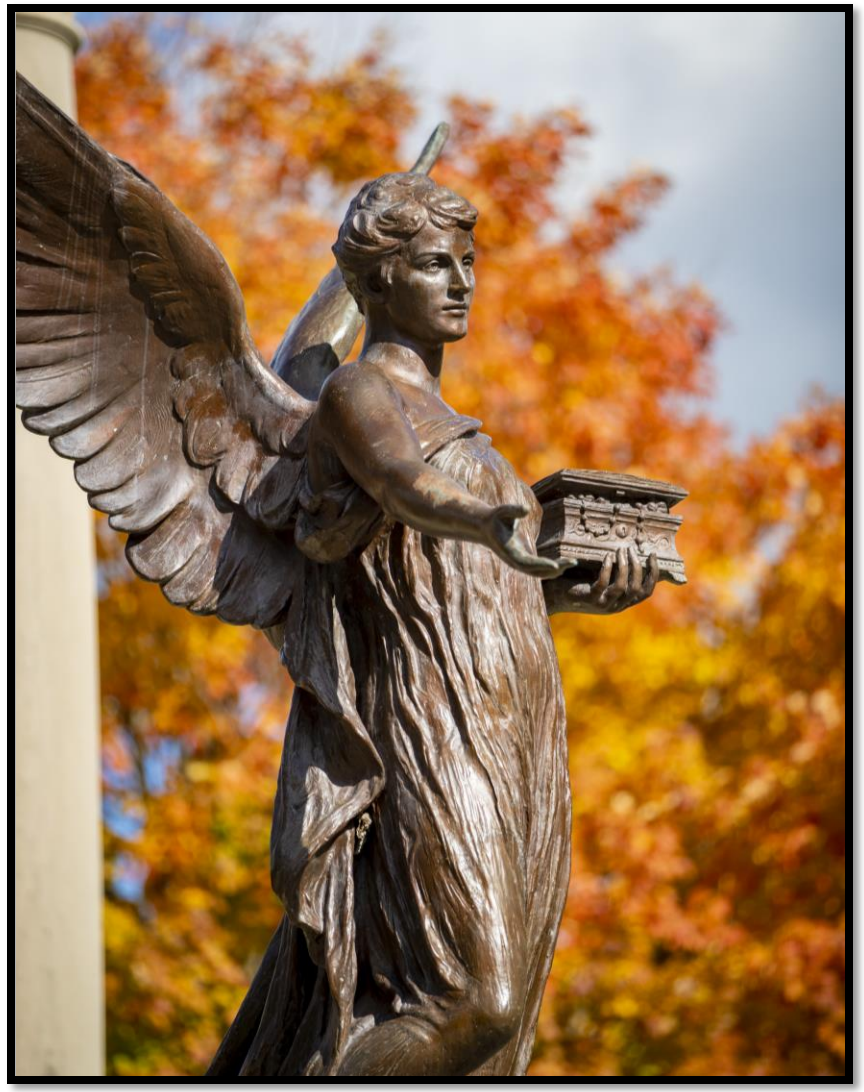
Longer Term Goals

- We hope that these efforts drive willing cooperators to join our **future advisory groups and research projects**, similar to what Joseph shared.

  - If they want to stay engaged, we create opportunity to do so!

- We want **all** BSU personnel to feel that they are able to collaborate across campus, regardless of their title or role, *using the common language of data.*



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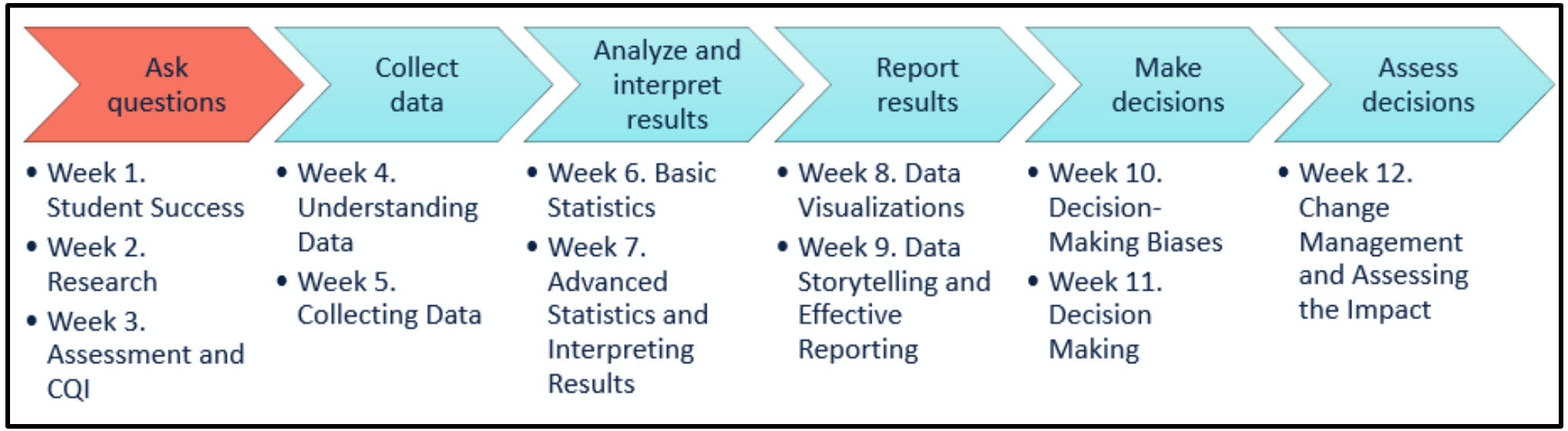
How can you replicate this?



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How can you replicate this?

DLI curriculum (data literacy framework)

Your own institutional context

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