Comprehensive Power BI and Data Literacy Program

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## 1. Program Overview

This program is designed to build comprehensive data literacy and proficiency in Power BI and Excel, empowering learners to transform data into actionable business insights. It caters to individuals at varying skill levels, from beginners seeking foundational knowledge to experienced professionals looking to deepen their analytics expertise. The program blends self-paced modules, instructor-led workshops, and real-world applications to ensure learners can confidently apply their skills to diverse data scenarios.

Target Audience: Amtrak employees seeking to enhance their business intelligence capabilities.

### Goals:

- Equip learners with foundational and advanced data analytics skills.

- Foster critical thinking in data preparation, visualization, and storytelling.

- Enable learners to plan and execute effective dashboards and analyses.

- Build long-term capacity for data-driven decision-making across the organization.

## 2. Key Features

Self-Paced Modules: Foundational knowledge that learners can complete at their own pace.

Virtual Instructor-Led Workshops: Hands-on opportunities to apply skills in collaborative settings.

Participant Guide: Repository of notes, learning aids, video links, suggested resources and other job aids that learners can use as reference later.

Interactive Assessments: Tools like Kahoot and scenario-based quizzes to engage learners and gauge understanding throughout the course.

Spaced Learning: Scheduling multiple workshops Increases retention by decreasing cognitive load and spacing recall.

Capstone Project: Team-based application of learned skills to real company data.

Practical Applications: Focus on real-world use cases and varied data types (e.g., survey data, complex datasets).

Scalable Design: Content adaptable to other data tools like SQL, and Tableau.

Course Evaluation and ROI Measurement: Strategies to measure learning outcomes and program effectiveness.

## 3. Program Structure

Self-Paced Modules: Learners are given a time frame to complete self-paced learning as a pre-requisite to attending a workshop.

Virtual Workshops: Interactive sessions focusing on applying self-paced learning to real-world problems using multiple scenarios.

Post-Workshop Assignments: Individual projects to reinforce learning using a slightly different dataset.

Capstone Project: Finally, learners will work as teams using real company data to synthesize all learned skills using a rubric to assess progress.

## 4. Assessment Strategy

Pre/Post/Opt-Out Testing:

Baseline assessments for each module to identify knowledge gaps.

Post testing to evaluate training program effectiveness.

Enable learners to skip topics they have already mastered.

In-Workshop Assessments:

Scenario-based quizzes and interactive group activities (e.g., Kahoot).

Measure knowledge retention and understanding after workshop modules.

Capstone Evaluation:

Rubric-based feedback on team projects, focusing on technical accuracy, storytelling, and business impact.

## 5. Scalable Expansion

1. Framework can be applied to new types of data and business intelligence tools
2. Build modules tailored to Amtrak’s unique datasets and business goals.
3. Self-paced learning, participant guides, job aids are available at scale. Time=stamped Recordings of Workshops will be available
4. Initial workshops can help to identify champions withing the Amtrak community to serve as mentors and guides

## 6. Course Evaluation and ROI

### Qualitative Metrics:

Learner feedback through surveys and focus groups.

Observations on how new skills are applied in the workplace.

### Quantitative Metrics:

Pre- and post-test score improvements.

Workshop attendance and completion rates.

Time savings or efficiency improvements reported by employees.

### ROI Measurement:

Compare program costs to measurable business outcomes (e.g., improved reporting accuracy, faster decision-making).

Identify areas for improvement and iterate on program design.

## 7. Needs Analysis

This outline is a working draft, subject to refinement based on a thorough needs analysis. The analysis will:

- Identify skill gaps and organizational priorities.

- Validate module relevance and sequence.

- Align learning outcomes with business goals.

## 8. Potential Learning Path with Objectives

### Module 1: Foundations of Data Science and Literacy

#### Objectives:

- Remember: Define key terms in data literacy.

- Understand: Explain the role of data in decision-making.

- Apply: Classify data types and identify appropriate use cases.

#### Pre-Requisites:

- Introduction to data literacy.

- Overview of data types and sources.

#### Content:

- Introduction to data literacy and analytics.

- Data types: Qualitative vs. Quantitative.

- Data sources and their business implications.

- Exploration techniques: histograms, Pareto analysis, clustering, etc.

### Module 2: Excel for Data Analysis

#### Objectives:

- Remember: Identify key Excel features for data analysis.

- Understand: Explain the limitations and advantages of Excel vs. Power BI.

- Apply: Use pivot tables, formulas, and conditional formatting effectively.

#### Pre-Requisites:

- Basic Excel navigation and formula use.

- Data cleaning techniques.

#### Content:

- When to use Excel vs. Power BI.

- Pivot tables and advanced formulas.

- Data cleaning and organization in Excel.

### Module 3: Power BI Overview and Interface

#### Objectives:

- Remember: List Power BI components and their purposes.

- Understand: Navigate the Power BI interface and manage workspaces.

- Apply: Import data from multiple sources.

#### Pre-Requisites:

- Navigating the Power BI interface.

- Importing data into Power BI.

#### Content:

- Navigating Power BI dashboards and reports.

- Organizing datasets within Power BI.

### Module 4: Preparing and Transforming Data

#### Objectives:

- Remember: Recall common data transformations in Power Query.

- Understand: Explain the importance of data normalization.

- Apply: Perform basic transformations in Power Query.

#### Pre-Requisites:

- Introduction to Power Query.

- Common data transformations.

- Basics of data normalization.

#### Content:

- Transforming data with Power Query.

- Normalization and its use cases.

- Calculating descriptive statistics in Power BI.

### Module 5: Data Modeling and Relationships

#### Objectives:

- Remember: Define cardinality and schema types.

- Understand: Explain relationships in data models.

- Apply: Build and refine data models in Power BI.

#### Pre-Requisites:

- Understanding relationships in Power BI.

- Cardinality and schema basics.

#### Content:

- Managing relationships and joins.

- Star vs. Snowflake schemas.

### Module 6: Introduction to DAX

#### Objectives:

- Remember: Identify basic DAX functions.

- Understand: Explain the purpose of DAX measures.

- Apply: Create calculated columns and measures.

#### Pre-Requisites:

- Aggregate functions in Excel.

- Basics of Power BI data modeling.

#### Content:

- Aggregate, iterative, and time intelligence functions.

- Practical applications of DAX.

### Module 7: Advanced Power BI Features

#### Objectives:

- Remember: Recall advanced Power BI features.

- Understand: Explain the use cases for slicers and conditional formatting.

- Apply: Create interactive dashboards with slicers.

#### Pre-Requisites:

- Slicers and filters in Power BI.

- Visualization basics.

#### Content:

- Slicers, groups, lists, and bins.

- Conditional formatting for enhanced insights.

### Module 8: Data Visualization for Survey Data

#### Objectives:

- Remember: List preferred data types for surveys.

- Understand: Explain strategies for analyzing open-text responses.

- Apply: Create dashboards for survey data visualization.

#### Pre-Requisites:

- Principles of data visualization.

- Choosing visuals for data storytelling.

#### Content:

- Planning and developing surveys.

- Handling text responses and multiple-response datasets.

### Module 9: Designing Effective Dashboards

#### Objectives:

- Remember: Recall dashboard design principles.

- Understand: Explain how to align dashboards with business goals.

- Apply: Create and refine dashboards.

#### Pre-Requisites:

- Drafting potential dashboard layouts.

- Understanding business requirements for dashboards.

#### Content:

- Best practices for dashboard design.

- Iterative refinement of dashboards.

### Capstone Project

#### Objectives:

- Remember: Summarize learned concepts.

- Understand: Explain the rationale behind dashboard choices.

- Apply: Create a comprehensive dashboard using real company data.

- Evaluate: Present findings and receive feedback.

#### Pre-Requisites:

- Attending or testing out of all 9 workshops.

#### Content:

- Team-based project based on a rubric, scored by participants.

## 9. Suggested List of Front-Loaded Self-Paced Topics

### Foundational Topics:

- Introduction to data literacy and analytics.

- Understanding data types: qualitative vs. quantitative.

- Overview of data sources: internal vs. external.

- Data organization best practices: file structures and naming conventions.

### Excel Skills:

- Creating and using pivot tables.

- Data cleaning techniques (handling missing values, duplicates, etc.).

- Basic formulas and functions (e.g., VLOOKUP, CONCATENATE).

- Conditional formatting for insights.

### Power BI Fundamentals:

- Navigating the Power BI interface.

- Importing data from various sources (Excel, SQL, SharePoint).

- Introduction to Power Query for data transformation.

- Common data transformations (unpivot columns, filtering, adjusting data types).

- Creating relationships and understanding cardinality in Power BI.

### Visualization Basics:

- Principles of effective data visualization.

- Choosing appropriate visuals for different data types.

- Introduction to slicers and filters.

- Conditional formatting for Power BI visuals.

# Developing An Effective Learning Experience for Data Literacy: My Design Process

## Introduction

Designing impactful learning experiences requires a balance of creativity, evidence-based strategies, and a deep understanding of both the learners and the subject matter. Today, I want to walk you through my process for developing a comprehensive Power BI and Data Literacy Program. I’ll outline my methodology, highlight what makes my approach distinct, and discuss the benefits it brings to learners and stakeholders.

## My Iterative Process

### 1. Understanding the Context and Goals

- Action: I began by identifying the organizational goals and audience needs. For this project, I focused on empowering employees from a national passenger rail service provider with data literacy skills to make data-driven decisions. Although I will still have to complete a full needs analysis, I find it’s very helpful to have an outline or possible learning plan in place to win the bid and give stakeholders a chance to envision what a top-tier program should include.

- Value: This step ensures that the learning experience aligns with business objectives and resonates with the target audience.

### 2. Conducting Research

- Action: I reviewed existing resources, including videos, articles, and sample training programs, to understand how Power BI and data literacy are traditionally taught.

- Value: This research revealed gaps in existing methods, such as a lack of focus on dashboard planning and handling complex data types like surveys.

### 3. Drafting an Initial Plan

- Action: I created an outline with modules and lessons based on essential topics. This included foundational skills, practical applications, and advanced techniques.

- Value: Starting with a broad structure allowed me to ensure comprehensive coverage of the topic while leaving room for refinement.

### 4. Seeking Feedback and Refining

- Action: I iteratively refined the outline based on feedback, adding new sections like a dedicated Excel module and a focus on dashboard planning.

- Value: Feedback-driven refinement ensures the content remains relevant, detailed, and aligned with stakeholder expectations.

### 5. Incorporating Unique Elements

- Action: I introduced innovative components like the "Data Visualization for Survey Data" module and emphasized iterative dashboard planning.

- Value: These additions address specific challenges learners face, making the program more practical and impactful.

### 6. Pre-Testing and Post-Testing Self-Paced Modules

- Action: Self-paced modules are paired with pre- and post-tests to ensure learners can master key concepts at their own pace before joining workshops. These assessments allow learners to:

- Learn flexibly at their own pace.

- Demonstrate baseline knowledge to join instructor-led workshops confidently.

- Spend workshop time applying their knowledge and asking informed questions.

- Value: This approach minimizes the risk of learners falling behind, ensures adequate baseline skills, and provides granular insights into learning outcomes across topics.

### 7. Emphasizing Real-World Application

- Action: Each module includes activities and projects designed to mirror real-world scenarios, culminating in a capstone project using company data.

- Value: This approach bridges the gap between theoretical learning and practical application, ensuring learners can immediately apply their skills.

### 8. Finalizing the Plan

- Action: I consolidated all refinements into a comprehensive and structured plan, ensuring alignment with the organization’s objectives and preparing it for presentation.

- Value: The final product is a well-rounded, learner-focused program that stands up to scrutiny from both learning professionals and data experts.

## Benefits of my Approach

### 1. Learner-Centric Design

- Traditional approaches often focus on linear instruction, emphasizing content delivery over learner engagement. My approach prioritizes learners’ needs by integrating self-paced modules, interactive workshops, and hands-on projects.

### 2. Iterative Dashboard Planning

- Many training programs dive straight into building dashboards without teaching learners how to plan them. I emphasize the importance of drafting potential dashboards and critically thinking about insights before opening Power BI.

3. Empowering Learners to Think Beyond the Template

- Establishing a strong foundation in data types and Power BI capabilities before diving into the tool empowers learners to apply their knowledge to real-world scenarios. This approach encourages critical thinking and enables learners to design dashboards tailored to their unique needs, rather than simply replicating pre-existing examples.

### 4. Focus on Complex Data Types

- Typical programs overlook nuanced data scenarios like surveys with text responses or multiple-choice answers. My program includes a dedicated module to help learners master these challenges.

### 5. Pre-Testing and Post-Testing

- Unlike traditional courses that test learners only at the end, my program incorporates pre- and post-tests for each self-paced module. This:

- Ensures learners have baseline knowledge before workshops.

- Allows for flexibility in pacing and comprehension.

- Provides multiple evaluation points for learning outcomes.

- Gives the organization granular insights into employee skills.

### 6. Scalability and Customization

- This program is designed to evolve with organizational needs, incorporating advanced tools and company-specific datasets over time.

### 7. Alignment with Organizational Goals

- Unlike generic training, this program is tailored to Amtrak’s context, ensuring learners acquire skills that directly benefit the organization.

## Conclusion

The iterative process used to develop this learning experience demonstrates a commitment to both instructional excellence and organizational impact. By combining traditional best practices with innovative elements, I’ve created a program that empowers learners while addressing business goals. This approach ensures that training is not just a checkbox but a transformative experience for all stakeholders.

**Presentation:**

**[Title Slide: "Designing a Comprehensive Power BI Data Literacy Program"]**

**[Opening Scene: Energetic music plays as the title screen fades into a confident presenter on a well-lit virtual stage.]**

**Presenter:**  
*"Hi, I’m [Your Name], a learning experience designer specializing in innovative, data-driven training programs. Today, I’m excited to share the design process behind my Power BI and data literacy program—a comprehensive learning solution tailored to empower professionals with actionable insights and critical thinking skills in data analytics."*

**[Scene 1: The Vision and Goals]**

**Presenter:**  
*"Let’s start with the vision. This program was designed for Amtrak employees, aiming to close skill gaps in business intelligence while aligning learning objectives with organizational goals. The ultimate aim? To empower employees to confidently analyze data, craft compelling stories, and create their own business intelligence and data visualization dashboards."*

**[B-roll: Visuals of Amtrak trains, team meetings, and dashboards on screens.]**

**Presenter:**  
*"Learners will develop the skills to work with a variety of data sources—like AWS, enterprise data warehouses, Databricks, and SQL databases—and use tools such as Power BI and Tableau to design and implement customized solutions that drive business decisions."*

**[Scene 2: The Iterative Design Process – What Sets This Program Apart]**

**Presenter:**  
*"Now, let me walk you through my design process and explain what makes this data literacy and visualization program so impactful. Unlike many traditional programs that focus solely on tool-specific tutorials, this program is designed to teach critical thinking and design skills, empowering learners to go beyond merely replicating what they’ve seen in another video."*

**Step 1: Understanding Context and Needs**  
*"Every great program starts with understanding the audience and goals. For Amtrak, that meant addressing not only technical skills gaps but also the need for employees to create their own dashboards using diverse data sources—like AWS, Databricks, and enterprise data warehouses—and tools such as Power BI and Tableau."*

**[B-roll: Teams brainstorming with whiteboards and dashboards being developed in Power BI and Tableau.]**

**Presenter:**  
*"The focus was clear: learners needed both the what and the why—the foundational knowledge of data concepts and the ability to think critically about how to apply them to their unique business challenges."*

**Step 2: Addressing Common Pitfalls in Data Literacy Programs**  
*"Many existing programs jump straight into technical details or dashboard creation without teaching learners how to plan and design effectively. This approach often leads to surface-level understanding and missed opportunities for meaningful insights."*

**[Graphic: Split screen of "Traditional Course" vs. "This Program," with traditional courses labeled “Copy/Paste Learning” and yours as “Critical Thinking & Design.”]**

**Presenter:**  
*"To avoid these pitfalls, my program uses self-paced modules to build a solid foundation, followed by workshops where learners apply their skills using real-world scenarios and diverse data types. This structure ensures they learn how to think through challenges and create dashboards tailored to their specific needs."*

**Step 3: Front-Loading Learning with Self-Paced Modules**  
*"The self-paced modules are a game-changer. By front-loading the learning, participants can acquire foundational skills at their own pace before joining workshops. This means every learner, regardless of their starting point, has an opportunity to master core concepts."*

**[B-roll: Learners engaged with online training, watching videos, and taking pre-tests at their own pace.]**

**Presenter:**  
*"This approach reduces cognitive load during workshops, as learners arrive prepared to focus on applying their skills collaboratively. It also creates a more inclusive learning environment, where no one is left behind due to varying levels of prior knowledge."*

**Step 4: Interactive Workshops – Application and Collaboration**  
*"Once learners complete the prerequisites, the program shifts to hands-on, instructor-led workshops. Here, they tackle real-world scenarios—designing dashboards for survey data, combining complex data types, and addressing organizational challenges with innovative solutions."*

**[B-roll: Teams working on dashboards, engaging in discussions, and presenting findings.]**

**Presenter:**  
*"These workshops foster teamwork and collaboration, with participants learning not just from the instructor but also from each other. They build the confidence to handle diverse datasets, draft dashboard designs, and iterate for better insights."*

**Step 5: Designing for Scalability and ROI**  
*"Another key element of my process is scalability. While this program focuses on Power BI, it’s designed to evolve—adapting to other tools like Tableau or SQL and incorporating company-specific datasets. This ensures it remains relevant as organizational needs grow."*

**[Graphic: Program roadmap showing expansion to Tableau, SQL, and other tools over time.]**

**Presenter:**  
*"From the learner’s perspective, the program is structured to provide immediate results—like improved reporting accuracy or faster decision-making—while also fostering long-term growth through critical thinking and design skills."*

**[Scene 4: The Benefits of This Approach]**

**Presenter:**  
*"So, why does this iterative, learner-centered approach work so well? Let me break it down:"*

1. **Inclusive Learning with Prerequisite Modules**  
   *"By giving learners the chance to build foundational knowledge at their own pace, we ensure everyone starts workshops on an even playing field."*
2. **Focus on Design Thinking, Not Just Tools**  
   *"Learners are taught to draft, plan, and iterate dashboards thoughtfully, rather than merely replicating templates."*
3. **Real-World Application in Workshops**  
   *"Workshops focus on applying skills to real scenarios—whether it’s survey data, complex relationships, or storytelling through visuals."*
4. **Fostering Collaboration**  
   *"By working in teams during workshops, learners practice communication and collaboration, skills that are just as critical as technical expertise."*
5. **Alignment with Business Goals**  
   *"The program is tailored to organizational needs, ensuring that every skill taught has a direct impact on business outcomes."*

**[Closing Scene: Transformative Impact]**

**Presenter:**  
*"This program doesn’t just teach data visualization—it transforms how employees think about data, equipping them with skills they can apply immediately to solve real business problems. If you’re looking for an innovative learning experience designed for real impact, this is it."*

**[Closing Slide: Your contact information and website.]**

**Estimated Presentation Time**

The script is approximately **6–7 minutes**, assuming a steady speaking pace with pauses for emphasis and smooth transitions between scenes. The final time may vary based on additional commentary or the pacing of visuals.