Week 8: Implementing Data-Driven Teaching

Data Science for Mathematics Teachers

November 11, 2025

Course Information

Course: Data Science for Mathematics Teachers
Series: Professional Development Series
Duration: 8 weeks
Level: Beginner To Intermediate
Target: Mathematics Teachers

1 Week 8: Implementing Data-Driven Teaching

1.1 Learning Objectives

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

- Create a comprehensive data system for your math classes
- Integrate with existing school technology
- Train other teachers in basic data analysis
- Establish ongoing data-driven practices

1.2 Topics Covered This Week

- Building a complete educational data system
- Integration with school management systems
- Training colleagues and sharing insights

1.3 Key Concepts You Will Work With

- Database design and student information systems
- API integration with school management platforms
- Automated data pipelines and ETL processes
- Creating teacher training materials and workshops
- Building sustainable data practices and workflows
- Privacy and FERPA compliance in educational data
- Scaling analytics solutions across departments
- Long-term maintenance and system updates

1.4 Practical Exercises

Difficulty Level: Intermediate
Total Exercises: 3

Exercise 1: Concept-Based Challenge: Building a complete educational data system

Difficulty: Intermediate
Task: Develop beginner-friendly math programs for classroom demonstrations.
Program Requirements:

1. Use Database design and student information systems to create clear, simple code

2. Implement API integration with school management platforms students can understand

3. Add comments explaining each step

4. Include sample problems and solutions

5. Test with actual classroom scenarios

Output: Educational programs that make math concepts tangible.
Teaching Context: Long-term implementation and knowledge sharing

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Exercise 2: Concept-Based Challenge: Integration with school management systems

Difficulty: Intermediate
Task: Implement a solution to integrate with existing school technology.
Technical Requirements:

- Use Automated data pipelines and ETL processes as the primary method

- Integrate Creating teacher training materials and workshops for enhanced functionality

- Test your solution with real classroom data

- Document your code with clear comments

Deliverable: A complete Python script that mathematics teachers can use immediately.
Teaching Context: Long-term implementation and knowledge sharing

Exercise 3: Concept-Based Challenge: Training colleagues and sharing insights

Difficulty: Intermediate

Task: Implement a solution to train other teachers in basic data analysis.

Technical Requirements:

- Use Building sustainable data practices and workflows as the primary method

- Integrate Privacy and FERPA compliance in educational data for enhanced functionality

- Test your solution with real classroom data

- Document your code with clear comments

Deliverable: A complete Python script that mathematics teachers can use immediately.

Teaching Context: Long-term implementation and knowledge sharing