Pilot Course Curriculum and Intervention Plan for Data Management Systems (UEF)

"Improving the quality and sustainability of learning using early intervention methods based on learning analytics"

Project No. 2023-1-FI01-KA220-HED-000159757

Project ref. number	2023-1-FI01-KA220-HED-000159757
Project title	**ISILA - Improving the quality and sustainability of learning using early intervention methods based on learning analytics**
Document title	Template: Pilot Course Curriculum and Intervention Plan for Data Management Systems (UEF)
Document Type	Report
Document version	1.0.0
Previous version(s)	
Planned date of delivery	January 2025
Language	English
Dissemination level	Public
Number of pages	8
Partner responsible	Belgrade Metropolitan University (BMU)
Author(s)	Sonsoles López-Pernas, UEF
With contributions by:	Miroslava Raspopović Milić, BMU Jelena Jovanović, UiB
Revised by:	Miroslava Raspopović Milić

Table of Content

1 General course information

Course name	Data Management Systems
Institution	University of Eastern Finland
Course level	UEF
Teaching model	Hybrid (one group face-to-face, one group in the other classroom with classroom camera, one group on Zoom)
Course learning objectives	- Understand the fundamental concepts of databases and their role in data management - Grasp the principles of relational design and its importance in data organization - Gain proficiency in basic SQL (Structured Query Language) operations for data manipulation and retrieval - Operate databases using general-purpose programming languages through ORMs

2 Motivation and purpose (Why)

Goal of the inquiry	
What do you want to learn about the teaching and learning process?	How engaged are students in the weekly exercises? What is the evolution of students' self-regulation throughout the course?

3 Defining more precisely what to explore (What)

Specific questions of interest	
Key inquiry questions	- Are students making use of all the learning resources provided to them? - Is students' perception of effort accurate when compared to their online activity? - Are their differences in engagement between students attending the course in different modalities? - In which ways do students use AI throughout the course?
Data sources	- Engagement with the lectures - Exercise/assignment submission and grades - SRL weekly survey - ChatGPT conversation data

4 Data collection strategy (How)

Data sources	- LMS logs and grades - Discord - Survey data
Data aggregation	Data will be collected in xAPI format and integrated into Learning Locker directly from the LMS plugin (for logs) and through the csv2xAPI tool (the rest of the data) developed within the ISILA project

Detailed methods for data collection			
Week#	**Topic**	**Learning activities and materials**	**Data source(s) and collection method(s)**
1	**Intro to the course** **Key concepts of data management**	1 intro lecture (no content, just logistics) 1 lecture (slides)	- Interaction with slides, logged in the course LMS, - Filling out SRL survey
2	**From requirements to conceptual model**	2 lectures (slides) 1 exercise session	- Interaction with slides and exercises, logged in the course LMS

	Logical model: Entity-Relationship diagram		- Exercise grades and submission logs from LMS - Filling out SRL survey
3	Enhanced ER diagram The relational model	2 lectures (slides) 1 exercise session	- Interaction with slides and exercises, logged in the course LMS - Exercise grades and submission logs from LMS - Filling out SRL survey
4	Normalization Design antipatterns	2 lectures (slides) 1 exercise session using ChatGPT 1 assignment (homework)	- Interaction with slides and exercises, logged in the course LMS - Exercise grades and submission logs from LMS - Assignment grades and submission logs from LMS - ChatGPT conversation public URLs - Filling out SRL survey
5	SQL introduction & MySQL SQL basics	2 lectures (slides) 1 exercise session	- Interaction with slides and exercises, logged in the course LMS - Exercise grades and submission logs from LMS - Filling out SRL survey
6	SQL group by SQL Joins	2 lectures (slides) 1 exercise session using ChatGPT 1 assignment (homework)	- Interaction with slides and exercises, logged in the course LMS - Exercise grades and submission logs from LMS - Assignment grades and submission logs from LMS - ChatGPT conversation public URLs - Filling out SRL survey

7	ORMs	2 lectures (slides) 1 exercise session	- Interaction with slides and exercises, logged in the course LMS - Exercise grades and submission logs from LMS - Filling out SRL survey
8	Data security	1 lecture 1 gamified assignment (meme competition: homework)	- Interaction with slides and exercises, logged in the course LMS - Exercise grades and submission logs from LMS - Assignment grades and submission logs from LMS - ChatGPT conversation public URLs - Filling out SRL survey

5 Data analysis and interpretation (So What)

Sense making and interpretation context	Use dashboards to visualize engagement levels. Analyze correlations between activities and outcomes. Identify students that are in the bottom quartile of activity and self-regulation Compare results with course goals and prior expectations.

6 Interventions plan (Now What)

Potential interventions	Group-level interventions: ● Add more gamification or motivating activities if attendance drops, or provide more rewards ● Extend deadline of assignment if students are struggling ● Add extra resources for difficult concepts Personalized interventions (for students at risk) ● Personalized email offering 1-to-1 tutorial or additional support, trying to understand students' personal situation that might cause low engagement and try to help if possible