Unifying Data Model - Overview

The Ed-Fi Unifying Data Model (UDM) is an enterprise data model of commonly exchanged, shared, and analyzed K–12 education data. The model includes entities that will be easily recognized by people in the education field: students, teachers, assessment results, attendance, and many others. Those entities contain attributes (i.e., properties) that are also easily recognized: for example, assessment results have things like scores, date assessment was taken, and accommodations. Entities also have natural associations (i.e., relationships): for example, students are related to schools via their enrollments.

The Ed-Fi UDM is independent of any interchange mechanism, any database or data warehouse storage structure, or any type of application interface. It is meant to capture the meaning and inherent structure of the most important information in the K–12 education enterprise in order to facilitate information sharing of education data.

The purpose of the Ed-Fi UDM is to enable information sharing and reuse of education data. The Ed-Fi UDM provides a standard means for:

- **Data Description.** Provides a uniform means to describe education data, its structure (syntax), and meaning (semantics), thereby supporting its discovery and sharing.
- **Data Context.** Facilitates discovery based upon the definition of specific education data domains.
- **Data Sharing.** Supports the access and exchange of data based upon concrete implementation of the Ed-Fi UDM or subsets of the Ed-Fi UDM that provide semantic interoperability between systems.
- **Data Unification or “Harmonization”**. Provides the capability to compare education data artifacts across systems through a well-defined model that unifies the semantics of data artifacts into “common entities”.

As such, the Ed-Fi UDM forms the foundation for the Ed-Fi technical materials. The Ed-Fi Data Standard includes REST API Design Guidelines documentation and an XML Schema representation. The Ed-Fi UDM may also be used for designing data stores, such as relational or dimensional database schemas, or for designing other types of application interfaces, such as SOAP-based service interfaces.

Scope

The scope of the Ed-Fi UDM is K–12 education data relevant to schools, local education agencies, regional service education agencies, and state education agencies. The core goal of the Ed-Fi UDM is to capture “student-centric” information (that is, it is optimized to capture data directly relevant to decision-making as regards student performance), but it has grown over time into related areas of the K–12 enterprise.

The Ed-Fi UDM focuses on the most granular education data for specific students, teachers, schools, courses, grades, assessments, and so forth. It generally does not include aggregate data but rather includes the fine-grained source data from which aggregate data may be calculated.

Ed-Fi Unifying Data Model Notation

The Ed-Fi UDM is expressed as Unified Modeling Language (UML) Class diagrams. UML Class diagrams capture the logical structure of a domain (in this case the education domain) as a set of entities, attributes, and associations between entities.

Ed-Fi Domains

The scope of education data is large and its organization is complex. Domains serve to provide views of the Ed-Fi UDM to assist in its understanding and use. In many cases, a specific Ed-Fi data exchange schema may only deal with data in a single domain, such as assessment or enrollment. In other cases, it may span several domains, such as with a student transfer record.

The Ed-Fi UDM is organized into 16 base domains:

- Alternative/Supplemental Services
- Assessment
- Bell Schedule
- Discipline
- Education Organization
- Enrollment
- Finance
- Graduation
- Intervention
- School Calendar
- Staff
- Student Academic Record
- Student Attendance
- Student Cohort
These domains are generally well-recognized in the K–12 education data space.

Additional subdomains pre-defined in the Ed-Fi UDM are for specific and relatively common instances of Alternative and Supplemental Services:

- Career and Technical Education
- Migrant Education
- Special Education
- Title I Part A Services