

Case Study – Ed-Fi Solution

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Development and ongoing support of an education data standard, an accompanying reference implementation, and an example dashboard application for the Michael & Susan Dell Foundation.

Challenge

The Michael & Susan Dell Foundation wanted to create an open, XML-based, and CEDS-aligned education data standard and tool suite to enable integration from a wide range of existing education data sources so data can be sifted, analyzed, and put into use every day.

The resulting Ed-Fi solution, now licensed and managed by the Ed-Fi Alliance, intended to enable educators to:

- Easily access classroom and student-level data
- Track progress against lesson plans
- Accelerate student academic growth and achievement
- Facilitate more objective, fact-based, and engaging parent-teacher dialogues
- Integrate data from existing systems, such as student information systems (SIS), grade book applications, curriculum planning systems, and benchmark testing systems

Additionally, a central objective of the Ed-Fi solution was to leverage granular student-level data to power key metrics at the school administration, district agency, and state agency levels to help them meet compliance requirements while providing new insight into relative performance and program effectiveness.

Approach

Double Line was hired to engage educators and education administrators to develop a comprehensive understanding of key metrics and data that would have the greatest impact in supporting their daily efforts to facilitate student academic growth. Leveraging this real-world understanding, Double Line completed the development work for the education data standard and tool suite on behalf of the Michael & Susan Dell Foundation.

Unifying Data Model

Data interchange and interoperability are challenging endeavors when dealing with multiple heterogeneous systems. Enterprise data modeling is the practice of creating a conceptual model (typically with graphical representation) of the data that is used and shared across an enterprise or company. The Ed-Fi Unifying Data Model (UDM) is an enterprise data model for the K-12 education enterprise providing an alignment of structure and semantics that can be referenced and applied for a number of technical uses. The UDM is independent of any interchange mechanism, any database or data warehouse storage structure, or any type of application interface.

Double Line identified the importance of creating a conceptual and unifying data model to enable information sharing and reuse of education data across disparate systems. Working with stakeholders from state education agencies and the Michael & Susan Dell Foundation, Double Line established the UDM as the foundation for Ed-Fi solution technical materials.

Early in the process, Double Line recognized the careful balance necessary between standardization and customization. Users of the Ed-Fi solution would be able to standardize on a unified data model only to a point, after which the model would need to be customized to account for variations in how education services operate in a state or district. As such, the UDM was designed with a high degree of extensibility in mind, and implementing technologies (for example, XML) were chosen by Double Line based on their extensibility features.

XML Framework and Operational Data Store Reference Implementation

Double Line created a companion Extensible Markup Language (XML) framework to support exchanging student data among disparate source systems, such as grade book applications, curriculum and lesson planning systems, and benchmark testing and reporting systems. The data exchanged among these systems can include records on students' grades, absence rates, transcripts, and standardized test scores. The Michael & Susan Dell Foundation and Double Line determined it was important that the Ed-Fi solution be vendor-neutral and work with any hardware and software platform.

The Ed-Fi solution also includes a compatible reference implementation for a relational Operational Data Store (ODS) that can be used to bring data from various sources into a single, shared database. Double Line developed the reference implementation to include a platform-independent logical model and an example implementation for Microsoft SQL Server 2008.

Application Framework and Dashboard Starter Kit

Double Line created an application framework layer and a sample dashboard application utilizing the framework layer in order to visibly demonstrate the power of collecting this K-12 data. The Ed-Fi application framework includes a .NET programming interface and a technical implementation guide that provides prescriptive guidance and general concepts essential to creating Ed-Fi-powered applications. The dashboard source code starter kit is also included in the Ed-Fi solution. The kit provides a sample dashboard that enables educators to monitor critical performance indicators from a variety of sources in a single location, enhancing their ability to identify early warning signs and hidden growth opportunities, and to intervene to ensure that all students avoid failure and reach their full potential. Views can easily be tailored as needed for a variety of roles including teacher, principal, campus leader, district leader or others.

Community Support & Ongoing Maintenance

Subsequent to the initial release of Ed-Fi solution, Double Line, as an education data implementation expert, has supported implementation teams across the country as they work to leverage the Ed-Fi artifacts as a starting point for their systems.

Impact

The Michael & Susan Dell Foundation released the Ed-Fi solution to the education community free-of-charge in July 2011. Since then, the Ed-Fi solution has gained significant momentum in K-12 education among state education agencies, school districts and vendors. As of October 2012, nine states have licensed or are in discussions to license the Ed-Fi solution, and an additional four states will benefit from Ed-Fi-powered tools through the Shared Learning Collaborative. Collectively, these 13 states represent 54% of K-12 students and 39% of teachers across the United States.