

Arizona Department of Education



Ed-Fi



Arizona Department of Education
Information Technology Department
1535 W. Jefferson Street
Phoenix, AZ 85007-3209

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Overview

July 2011

It's Time for a Change

Here's what most teachers know about a new student in their classroom.

MARIA GARZA



Student: Maria Garza

Grade: 11

Comments

High School
Bradock High School

Homeroom:
Mrs. James

It's Time for a Change

What if you could give teachers *this* instead?

You can. Today.

Empower your teachers with the information they need to give the kids in your state an opportunity for a better education.

Become a Change Agent.

Find out how, with Ed-Fi.

The screenshot shows a 'STUDENT SNAPSHOT' dashboard for a student named Maria Garza. At the top, it identifies the user as Patricia James, a Grade 11 student in Mrs. James' Homeroom. The dashboard is divided into four main sections: Student Information, Current Schedule, Academic Dashboard, and Academic History. The Academic Dashboard is currently selected, showing an 'Overview' of Maria's profile. A red notification icon indicates that Maria is currently above grade level on test scores and college readiness indicators, but is falling short on advanced and college course requirements. Key points include: PSAT scores above average, SAT score above criterion, eligibility for advanced math & science courses, eligibility for the Distinguished Achievement Program (DAP), and a short fall in credits for the DAP graduation plan. Below the profile, a 'SUMMARY' section tracks Maria's performance across five categories: Student Engagement (Above Goal), Academic Progress (On Track), Academic Challenge (At Goal), and College & Career Readiness (At Goal). Each category includes a brief description, a progress indicator (green bar), and a peer comparison (e.g., Top 1/4).

Agenda

- The Ed-Fi imperative
- Defining Ed-Fi
- The power of dashboards
- Other data standards
- Support for vertical reporting
- Flexibility and responsiveness
- The Michael & Susan Dell Foundation's role
- Summary and next steps

Pop Quiz

- Which intervention programs your state funds are most effective at moving kids forward?
- How many AP teachers are in your state?
- How many times a day do your teachers use reports generated by your data systems to guide interaction in the classroom?
- Do your data systems help educators anticipate student needs, or simply conduct more thorough post-mortems?



The Ed-Fi Imperative

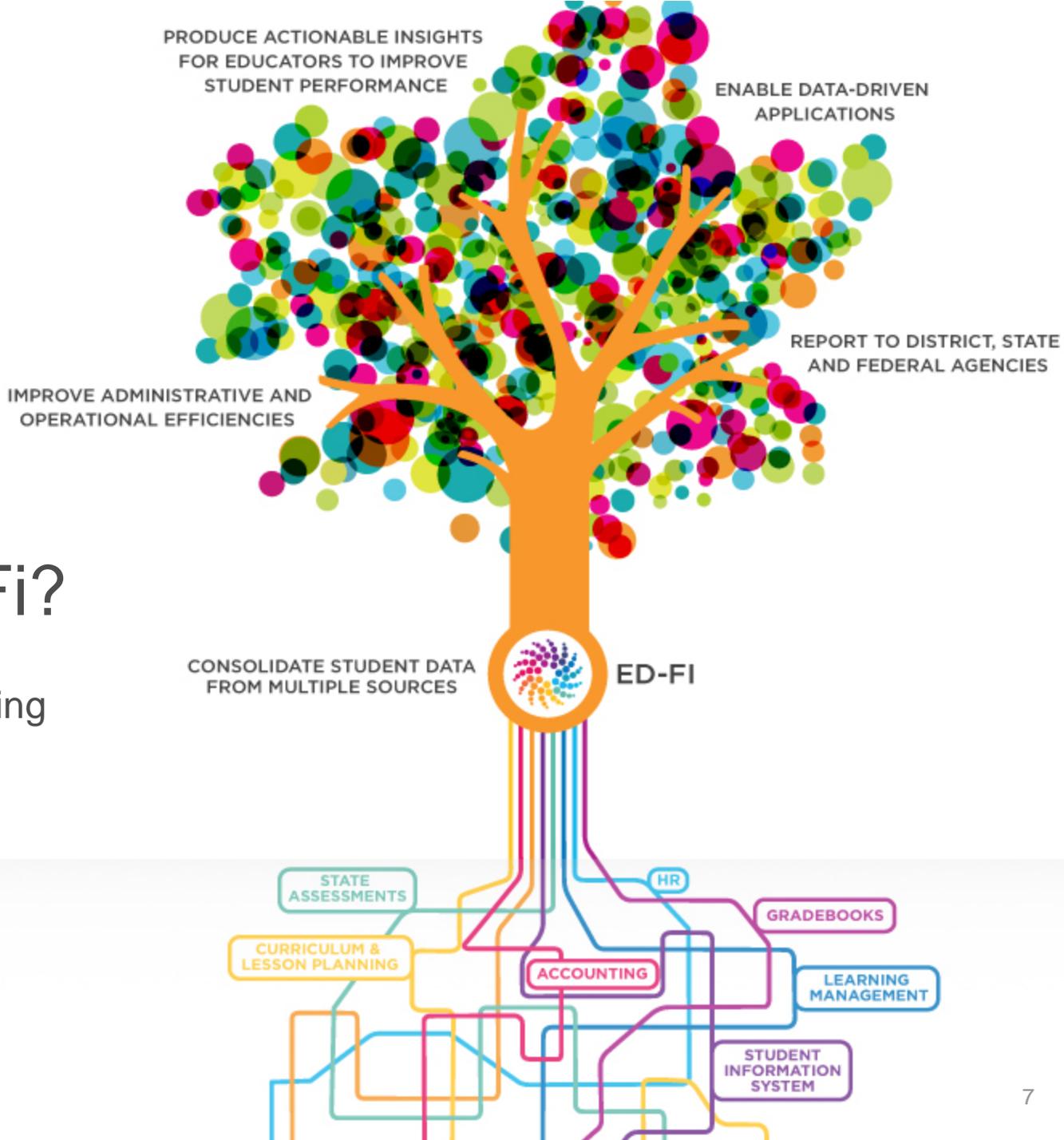
Educators aren't equipped with the insights needed to improve student outcomes.

- Data resides in multiple systems
- No way to unify data to provide a comprehensive view of each student
- Accountability metrics keep changing

The Walgreens down the street collects more data about its customers than we do about our students.

Gene Wilhoit
*Executive Director for
the Council of Chief
State School Officers*

(<http://bit.ly/myAC5C>)



What is Ed-Fi?

Universal XML-based standard for consolidating student data between information systems

Goal: Produce *actionable* insights for educators to yield better student outcomes

Current Reports

District Name: LUBBOCK ISD
District #: 152901

TEXAS EDUCATION AGENCY
Academic Excellence Indicator System
2008-09 District Performance

Indicator:	State	Region 17	District	African American	Hispanic	White	Native American	Asian/Pacific Is
TAKS Met 2009 Standard Grade 3 (English) First Administration Only								
Reading	2009	90%	90%	88%	80%	85%	97%	> 99%
	2008	89%	90%	88%	79%	86%	95%	> 99%
Mathematics	2009	86%	83%	80%	66%	77%	94%	97%
	2008	85%	83%	81%	67%	79%	90%	98%
All Tests	2009	82%	80%	76%	60%	71%	91%	97%
	2008	80%	79%	77%	61%	73%	87%	98%
TAKS Met 2009 Standard Grade 3 (Spanish) First Administration Only								
Reading	2009	84%	95%	97%	*	97%	*	*
	2008	83%	88%	87%	*	86%	*	*
Mathematics	2009	79%	78%	81%	*	80%	*	*
	2008	78%	82%	83%	*	83%	*	*
All Tests	2009	75%	76%	78%	*	78%	*	*
	2008	73%	78%	79%	*	78%	*	*
TAKS Met 2009 Standard Grade 4 (English)								
Reading	2009	86%	85%	84%	74%	80%	95%	> 99%
	2008	85%	84%	83%	73%	79%	94%	> 99%
Mathematics	2009	88%	86%	86%	71%	83%	94%	> 99%
	2008	87%	86%	83%	71%	77%	95%	> 99%
Writing	2009	92%	91%	92%	87%	90%	96%	> 99%
	2008	93%	93%	93%	87%	92%	96%	> 99%
All Tests	2009	78%	75%	74%	57%	68%	89%	> 99%
	2008	77%	76%	73%	56%	66%	89%	> 99%
TAKS Met 2009 Standard Grade 4 (Spanish)								
Reading	2009	81%	77%	79%	*	78%	*	*
	2008	77%	85%	90%	*	90%	*	*
Mathematics	2009	80%	86%	85%	*	85%	*	*
	2008	76%	81%	90%	*	90%	*	*
Writing	2009	93%	86%	92%	*	92%	*	*
	2008	91%	96%	> 99%	*	> 99%	*	*
All Tests	2009	73%	67%	68%	*	67%	*	*
	2008	69%	81%	88%	*	88%	*	*

Future Reports

STUDENT SNAPSHOT

Allen Deshotel Grade 5

ASSESSMENTS

READING ASSESSMENTS

- TPRI (05/09) DEV
- Tejas Lee (05/07) STILL DEV
- Reading Level (05/10) BELOW

BENCHMARK ASSESSMENTS

Benchmarks

- Reading/ELA (MOY 2010) ABOVE 75%
- Writing (BOY 2010) ABOVE 70%
- Mathematics (MOY 2010) ABOVE 70%
- Science (BOY 2010) BELOW 60%
- Social Studies (BOY 2010) ABOVE 80%

STATE STANDARDIZED ASSESSMENTS

TAKS Performance

- Reading (2010 Grade 5 TAKS) BELOW 2051
- Writing (2009 Grade 4 TAKS) BELOW 2099
- Mathematics (2010 Grade 5 TAKS) BELOW 1942
- Science (2010 Grade 5 TAKS) BELOW 1862

LANGUAGE ASSESSMENTS

English Language Learner

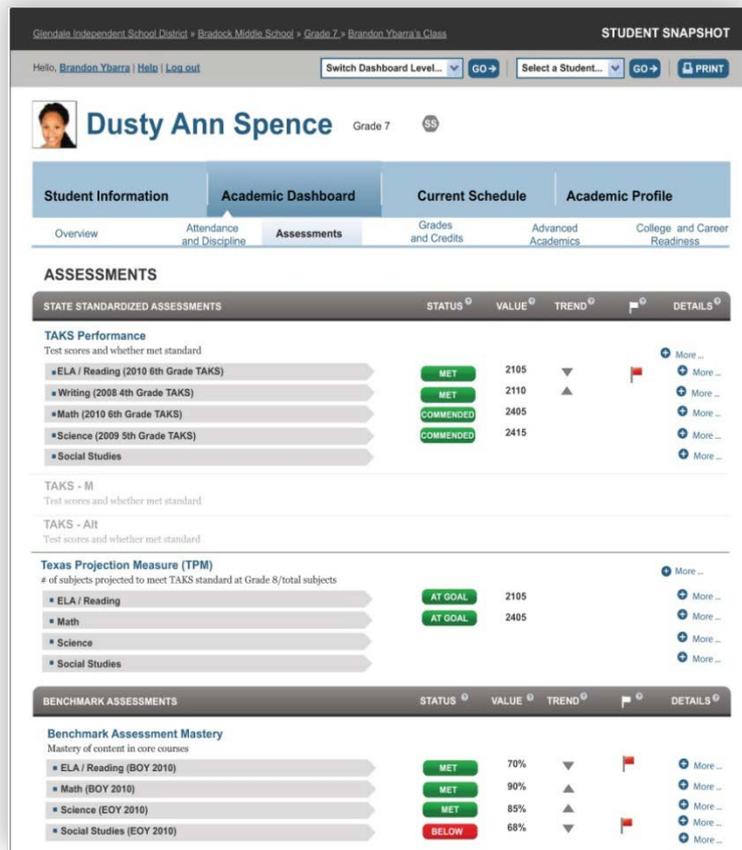
- PreLAS, LAS, LAS-O (2005) BEGINNER 1.2
- TELPAS (2009) ADVANCED 2.8

Click to see historical scores and progress during current school year.



The Power of Ed-Fi

Ed-Fi transforms data into insights that make it easier for teachers to teach, for students to learn, and for schools to succeed



The Ed-Fi solution consists of:

- Unifying data model
- Data exchange framework
- Application framework
- Sample dashboards

Ed-Fi Plays Well with Others

Ed-Fi is aligned and compatible with existing federal and local standards and systems

- ✓ A new standard that solves the pervasive problem of unifying data to support educator decision-making
- ✓ Augments—not replaces—what you already have
- ✓ Doesn't break anything you've implemented

NCES Data Handbooks

A list of data elements to ensure *consistency*

CEDS

A list with definitions and code sets, with a focus on the *meaning* of data being stored

Ed-Fi

Specific standard that *combines a data handbook, data exchange framework, application framework and sample dashboards*

Ed-Fi: Optimized for Vertical Reporting

Ed-Fi enables easy transmission of data from the Student to State level, with consistent formatting and user-friendly reporting



Student

Classroom

Campus

District/LEA

State

Class Period
Absence Rate is
captured and
reported at the
student level

Glendale Independent School District

Hello, Douglas Allen | Help | Log out

Switch Dashboard Level... GO >

Tyson Jones Grade 9 SS LE

Student Information | **Academic Dashboard** | **Current S...**

Overview | **Attendance and Discipline** | Assessments | Grades and Credits

ATTENDANCE AND DISCIPLINE

ATTENDANCE STATUS ⓘ

Daily Attendance Rate (Through October 22, 2010)¹
% of days student is in attendance

Last four weeks	95%
Last eight weeks	98%
Year to Date	98%

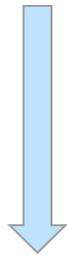
Class Period Absence Rate (Through October 22, 2010)¹
% of class periods missed

Last four weeks	11%
Last eight weeks	6%
Year to date	7%

¹ Metric has been adjusted to accommodate the student's late enrollment

Ed-Fi: Optimized for Vertical Reporting

Ed-Fi enables easy transmission of data from the Student to State level, with consistent formatting and user-friendly reporting



Student

Classroom

Campus

District/LEA

State

The student's Class Period Absence Rate is then included in the classroom view for teachers

Glendale Independent School District

Hello, Douglas Allen | Help | Log out

Switch Dashboard Level... GO

Allison Reynolds' Mathematics

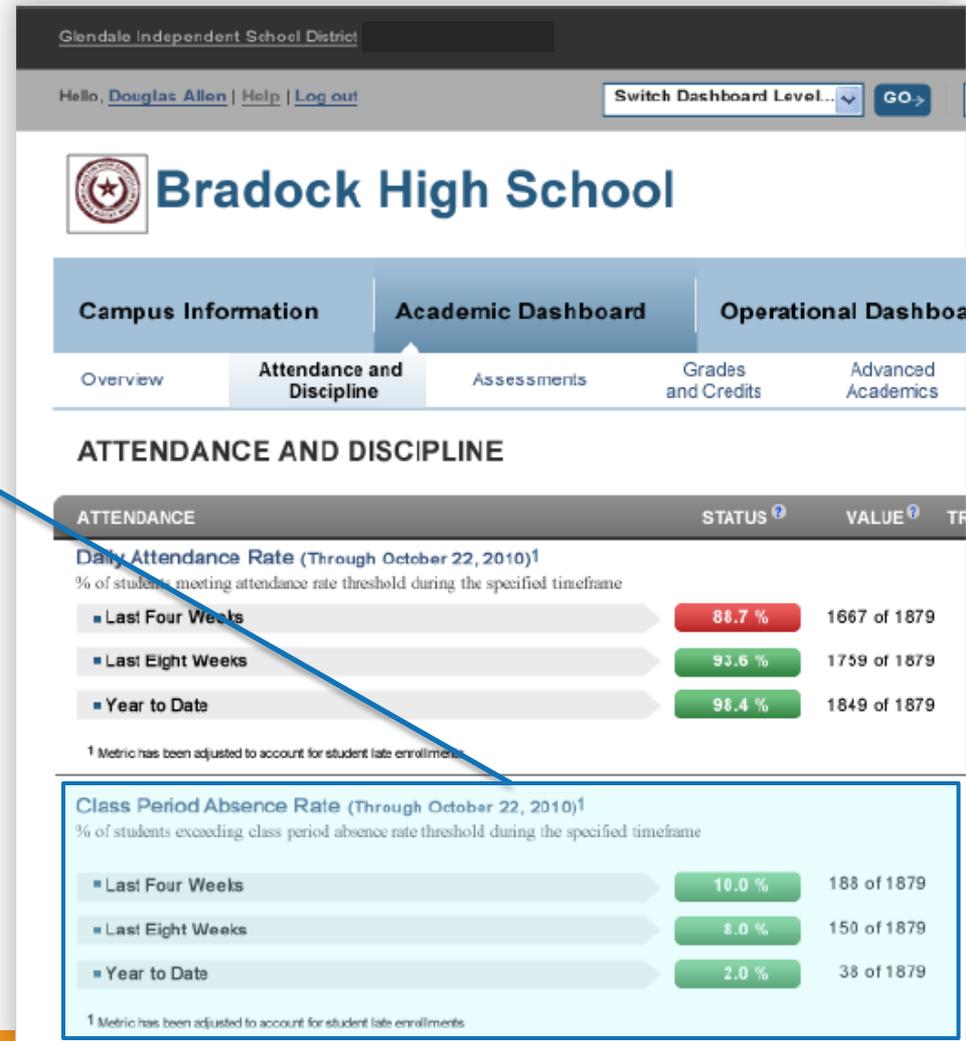
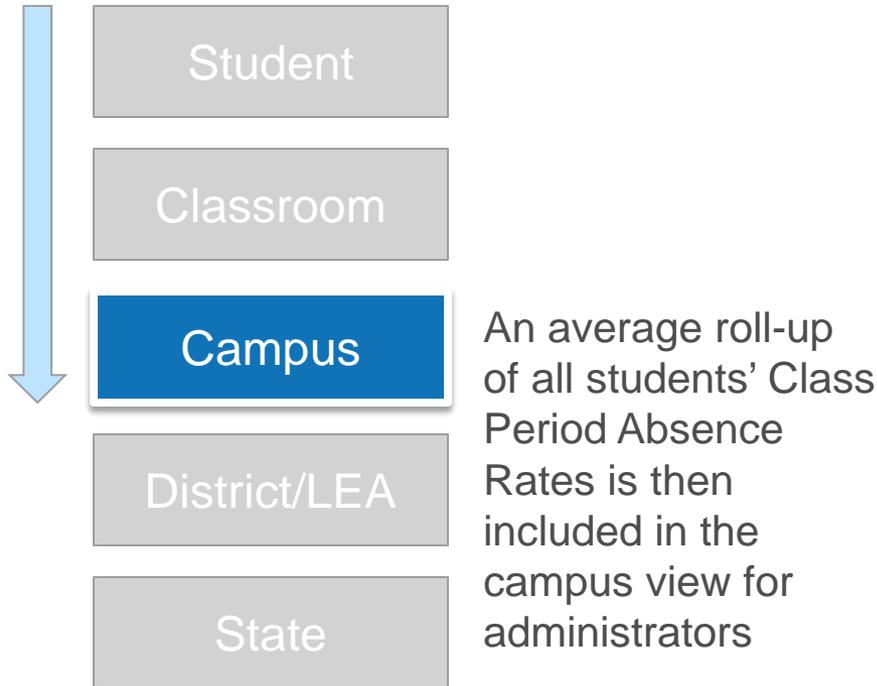
Grade 11

General Class Overview GO 3rd Period

		ATTENDANCE / DISCIPLINE	
Student	Designations	Class Period Absences	Discipline Incidents
Amanda Sharpe	GT	8.8% ▲	0
Amy Jaquez		9.6% ▼	0
Andres Waite		2.5% ◀▶	2
Brandy Aldy		0.8% ◀▶	0
Brooke Scott		6.7% ◀▶	0
Carl Neff	LANG	0.8% ▼	0
Cheronda Williams	GT	5.0% ◀▶	0
Chris Barragan		4.2% ◀▶	0
Clarissa Tenner		24.7% ▼	0

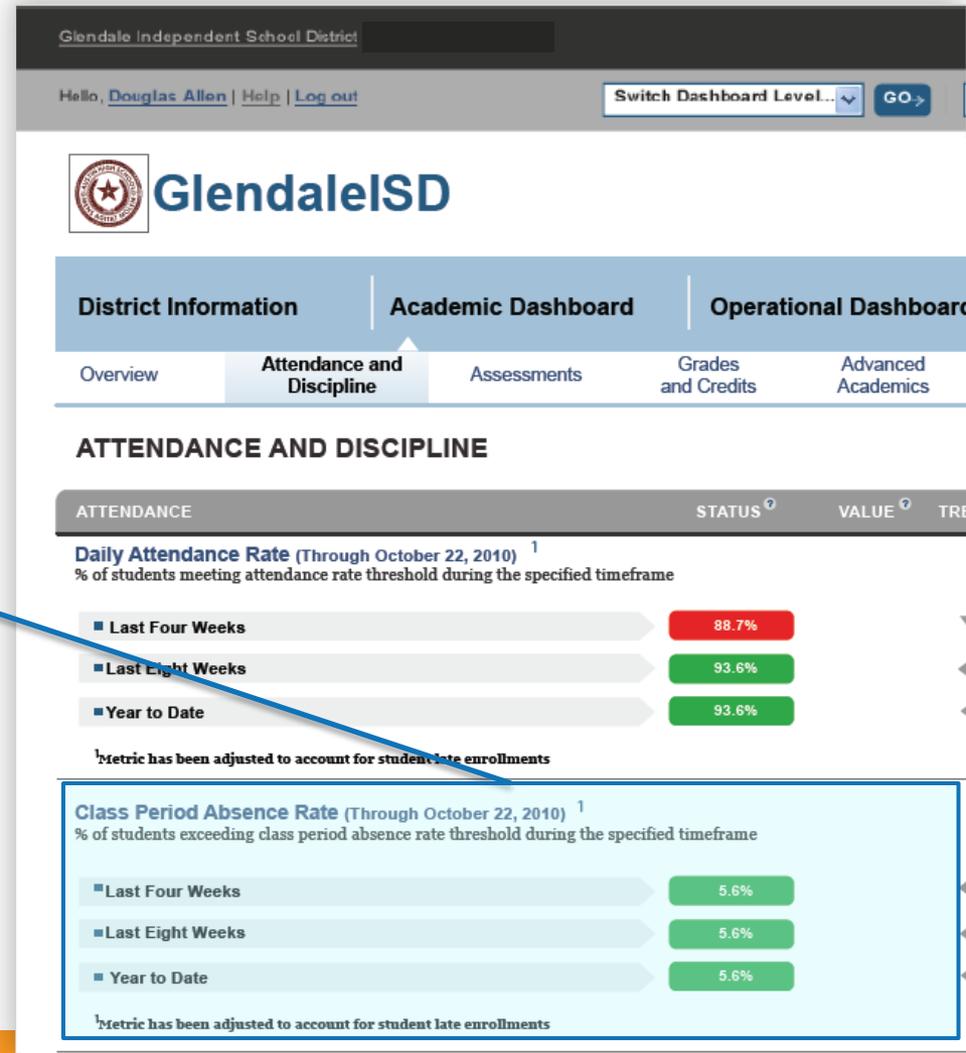
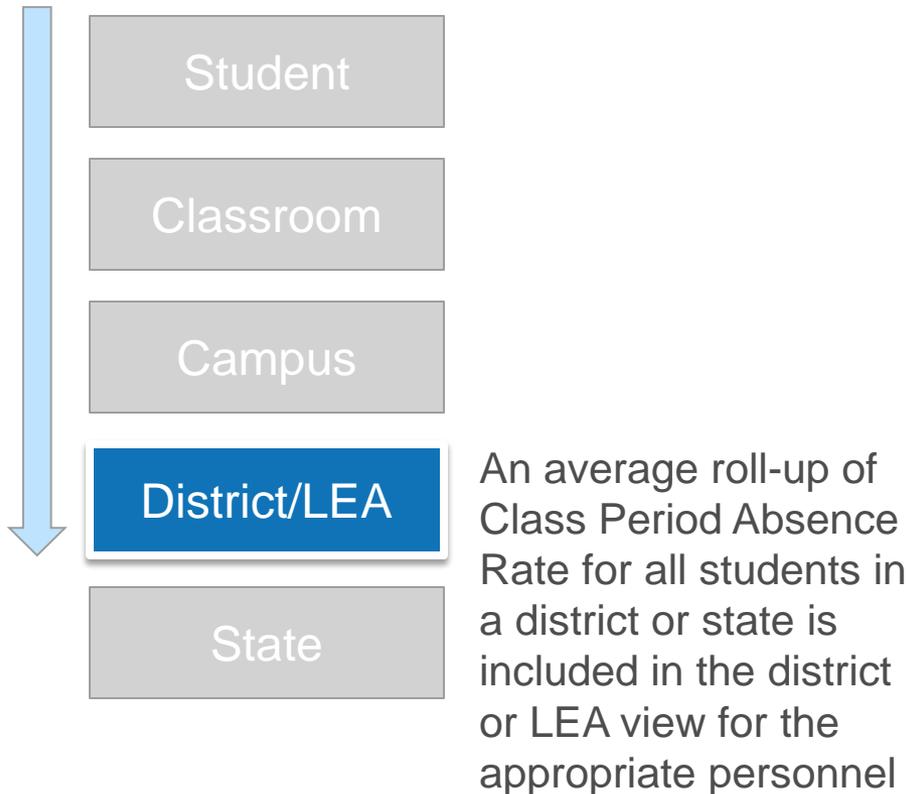
Ed-Fi: Optimized for Vertical Reporting

Ed-Fi enables easy transmission of data from the Student to State level, with consistent formatting and user-friendly reporting



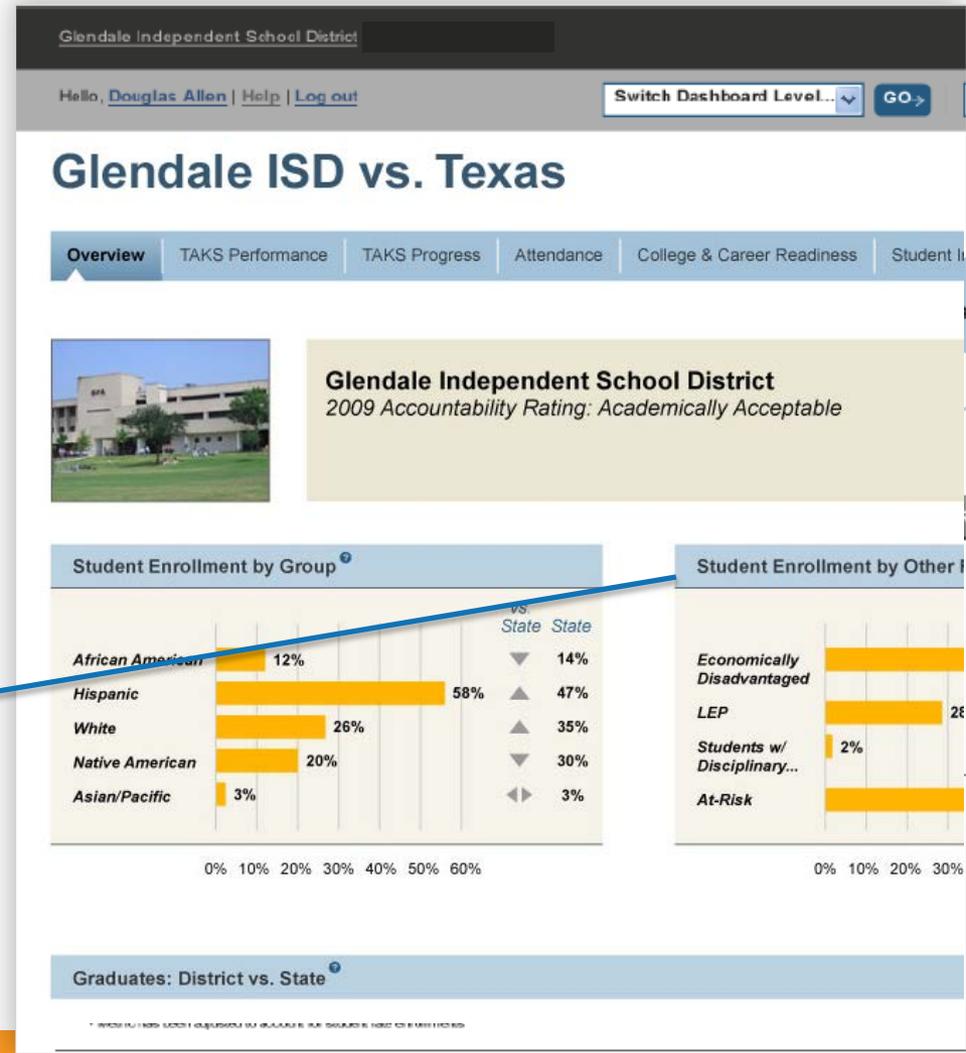
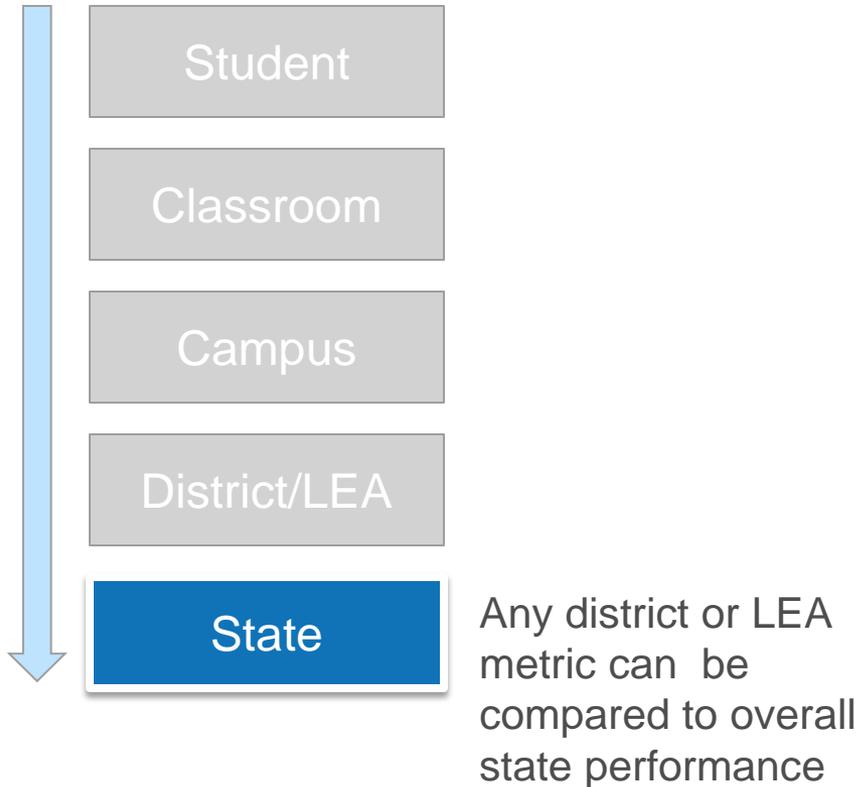
Ed-Fi: Optimized for Vertical Reporting

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Ed-Fi: Optimized for Vertical Reporting

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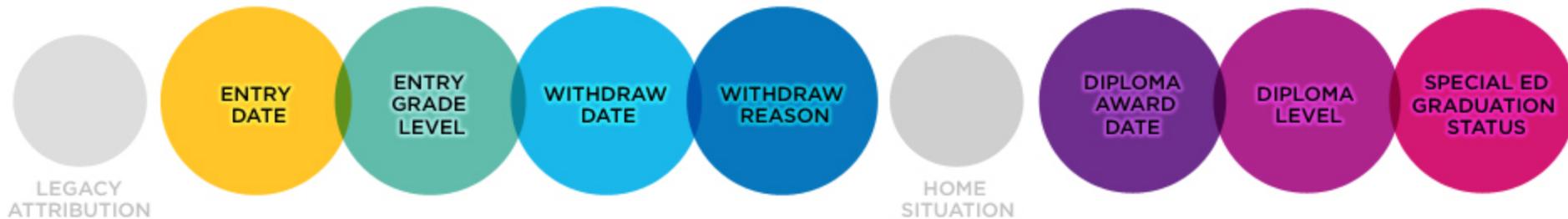
Ed-Fi Enables Flexibility and Responsiveness

A universe of over 400 data elements accommodates virtually any reporting need



Ed-Fi Enables Flexibility and Responsiveness

Combine data elements to accommodate continuously evolving accountability and performance metrics



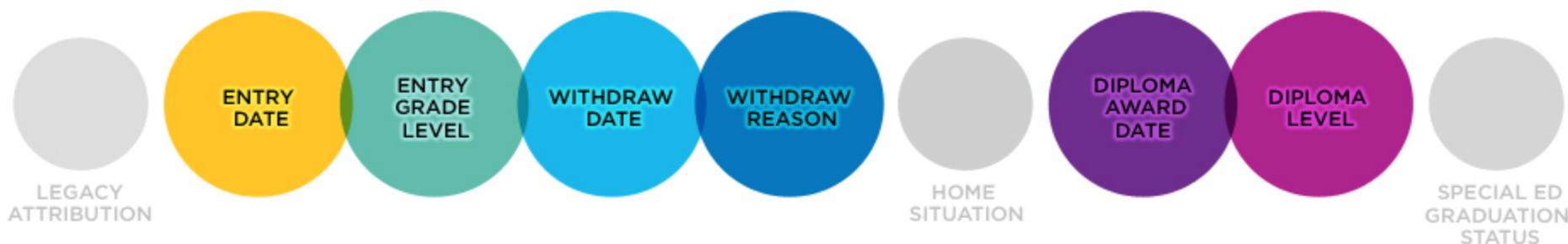
SAMPLE GRADUATION RATE ELEMENTS

National Governors Association (NGA)

Uses all except Legacy Attribution and Home Situation

Ed-Fi Enables Flexibility and Responsiveness

Combine data elements to accommodate continuously evolving accountability and performance metrics



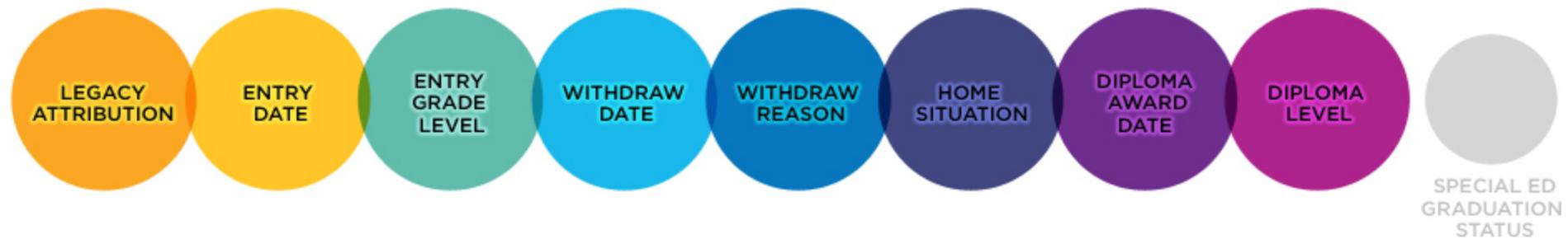
SAMPLE GRADUATION RATE ELEMENTS

New York

Uses all except Legacy Attribution, Home Situation, and Special Ed Graduation Status

Ed-Fi Enables Flexibility and Responsiveness

Combine data elements to accommodate continuously evolving accountability and performance metrics



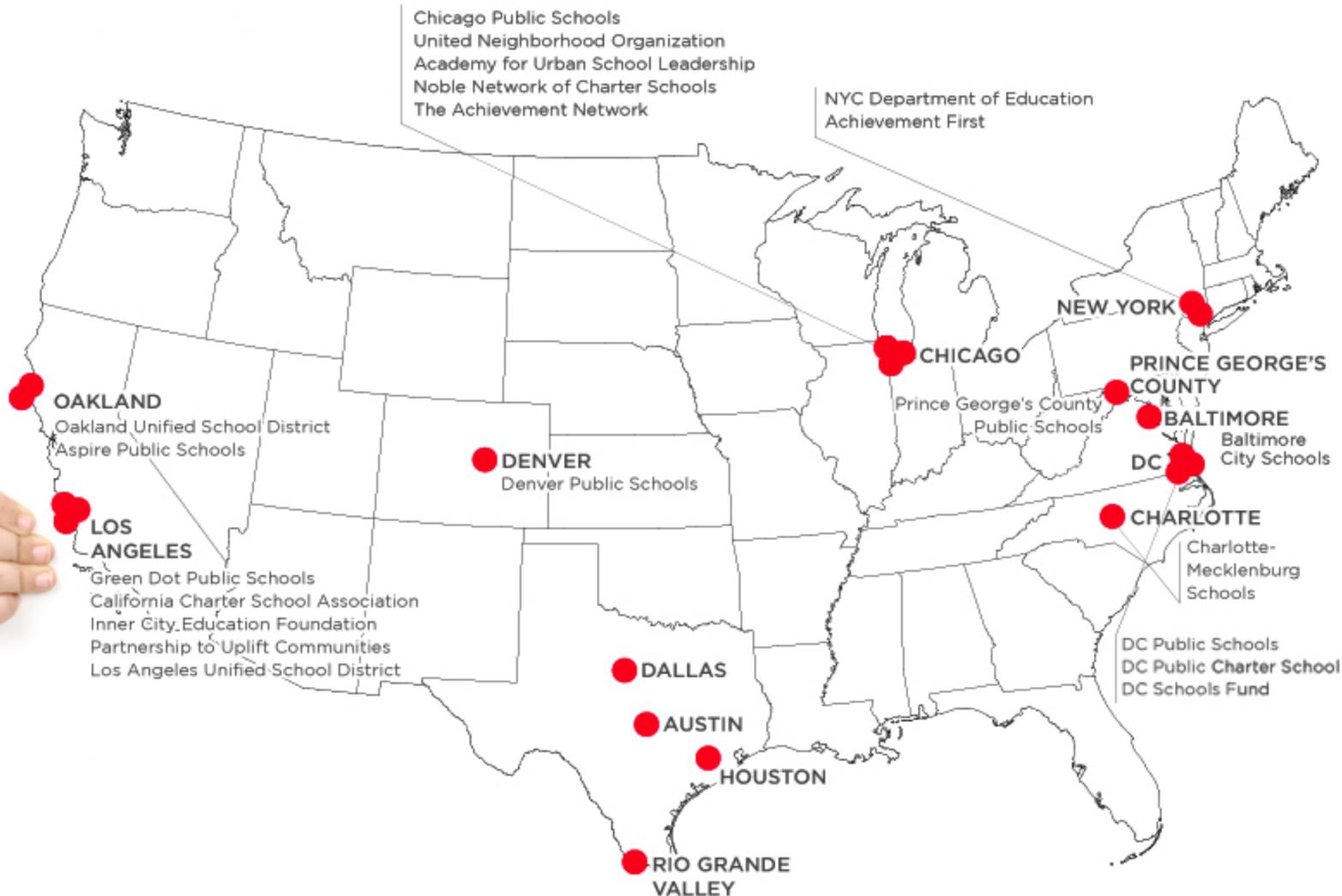
SAMPLE GRADUATION RATE ELEMENTS

Texas (FUTURE)

Uses all except Special Ed Graduation Status

Investment in Performance-Driven Education

The Michael & Susan Dell Foundation has invested almost \$150M in districts and charter management organizations across nine states



Ed-Fi: Accelerating Impact

- Quickly **identify and address hidden trends** that affect educational outcomes from the student to the state level
- Provide **teachers** with actionable, student-level insights from the first day of school throughout the year
- Provide **policy makers** and other stakeholders consistent and comparable information about school, district and program performance
- Empower **agencies** to be more responsive in solving problems before they impact funding
- Accommodate continuously evolving reporting requirements, and saves time and money on reporting

Next Steps

1. Visit <http://www.ed-fi.org/> for technical documentation, FAQs, and more
2. Schedule a live demonstration of Ed-Fi in action
3. Join the Ed-Fi Alliance

Lori Fey, Director of Policy Initiatives

Lori.Fey@msdf.org | (512) 600-5500

The Ed-Fi™ Data Standard: Transforming K-12 Education





Introducing Ed-Fi™

Ed-Fi is a new data standard that transforms education in the United States. Ed-Fi provides essential insights for educators to make informed, data-driven decisions to improve the academic outcomes of every student, while addressing the need for data consolidation and the reality of disparate school data systems with poor interoperability.

The first Ed-Fi implementations will go live in 2011. Twelve states have licensed or are in discussions to license the Ed-Fi standard, representing 34 percent of the nation's K-12 public school students and 39 percent of its teachers. The Michael & Susan Dell Foundation is actively building a coalition of schools, implementation partners, tool vendors, assessment providers and other parties to promote the adoption of Ed-Fi.

This paper discusses the creation of the Ed-Fi data standard, defines the components of the standard, outlines use cases, and overviews implementation and licensing issues.

Today's Education Environment

Each fall at campuses across the country, hundreds of students arrive as blank slates. Teachers and administrators are not familiar with their backgrounds or academic histories, and they have had minimal, if any, interaction with individual children. And limited information is readily available on either the individual students or the population as a whole.

Each day of the school year, new information becomes available as students and faculty interact. In each classroom, educators focus on compiling the profiles that help them positively affect student outcomes. Attendance records are taken. Test scores are recorded. Behaviors are observed. Student progress is charted.

Meanwhile, the central office is focused on operational details and making the school run smoothly. On any given day, the principal is evaluating the substitute teacher fill rate, trying to determine how many teachers are qualified to instruct advanced placement courses, and charting students' success against set standards in math and science.

And in other offices across the state, policy makers and school administrators are monitoring federal, state and district indicators designed to benchmark academic performance, student growth, college readiness and the quality of teaching.

The amount of data and information that must be processed at each campus and district to understand student needs, academic achievement and operational demands, generated a proliferation of information systems to collect and report data.

These multiple systems have, in turn, led to several interrelated challenges:

- **Interoperability.** Many education-related information systems are not designed to exchange data with other systems.
- **Adaptability.** Schools struggle to keep pace with changes to state and federal reporting requirements and adapting their systems to support them.
- **Constrained resources.** Enormous financial pressure in the education sector has made IT resources, whether internally or externally sourced, vulnerable to budget cuts. Basic tasks like running critical ad-hoc reports and implementing, managing and updating existing systems are a struggle.
- **Student record portability.** Data exchange among districts is a significant obstacle in an age of increasing family and student mobility.



Ed-Fi: Focused on Student Outcomes

One important and often overlooked issue underscores the limitations of existing information systems: Many educational data systems are designed solely to comply with state and federal reporting requirements, not to highlight information and trends that improve student performance in the classroom. The focus on compliance doesn't serve educators, who strive daily to track students' academic strengths and growth areas, educational goals, and personal circumstances. Especially with increasing day-to-day responsibilities, larger class sizes and increased student mobility, even the best educators can miss early warning signs such as changes in student behavior or incremental decreases in academic performance.

Since 2005, the Michael & Susan Dell Foundation has invested over \$150 million in 23 school districts and charter management organizations to ensure that educators have continuous access to the information they need to respond to the unique needs of each and every student. During that time, the Foundation also conducted focus group discussions with over 2,600 educators. Both initiatives highlighted two key insights. First, educators across the country want the same kind of information—a holistic portrait of their students that is both detailed and easy to understand. Second, the multiple and often non-interoperable information systems used by schools, districts and states nationwide cannot effectively deliver that information where and when it's needed most. While several initiatives have attempted to address this challenge (see *Comparable Standards and Initiatives* later in this paper), none have adequately tackled it.

Two elements are required to effectively impact student outcomes:

1. A data exchange standard that unifies student performance data from disparate systems
2. A toolkit for building customized, user-friendly dashboards that provide actionable information to educators and other parties based on the data compiled from these systems

Until now, no solution has successfully brought these two elements together.

The Ed-Fi Data Standard

Ed-Fi is an XML-based universal data standard that facilitates data exchange among student data systems in the K-12 education sector. Development was funded by the Michael & Susan Dell Foundation based on input from vendors, state education agencies and local education agencies. Ed-Fi augments existing systems instead of replacing them. Ed-Fi seeks to improve student achievement by extracting student information from a variety of sources, and by then standardizing, integrating and communicating this information to educators and other parties through Web-based dashboards, reports and other applications. Equipped with actionable insights, educators can make informed decisions on what steps are needed to improve the academic outcomes of students.

THE ED-FI VISION

By 2015, the Foundation aims to cover 50 percent of states and reach 75 percent of students and teachers with the Ed-Fi standard, providing the majority of teachers in the United States with actionable insights that can be used to make informed, data-driven for improving academic outcomes of every student.

The Ed-Fi solution comprises the following components:

- **Unifying data model (core schema)** – This is the central XML schema definition (XSD) that defines the common data elements such as the attributes, types and structures, on which the rest of the standard is based. The core schema serves the majority of schools' educational needs and provides the building blocks for additional schemas, such as the interchange and extension schemas used for more specific situations.



- **Data exchange framework (interchange schemas)** – These are schemas that depend on the core schema and serve as connectors to send and receive information among systems. Interchange schemas differ from the core schema in that each interchange schema defines the data exchange in highly specific scenarios, while the core schema defines a broad set of objects used in many general situations. Vendors can create new interchange schemas to accommodate new scenarios.
- **Application framework (extension schemas)** – These are additional schemas that extend the XML types in the core schema and enable new types to be added. Extension schemas may be necessary to provide specific data for state education agency (SEA) reporting, or to address specific reporting needs for grants and other education programs.
- **Example relational database model with metrics and sample dashboards** – The Ed-Fi solution includes an example relational database model as well as the metrics needed to define performance management indicators. This toolkit provides the elements necessary to build dashboards.

The extensibility of the Ed-Fi data standard means that virtually any information systems that collect, manage, report on, or provide analysis of student data can be unified. These include but are not limited to student information systems, grade book applications, curriculum and lesson planning systems, and benchmark testing and reporting systems. The kinds of data exchanged among these systems might include, for instance, records on students' grades, absence rates, transcripts and standardized test scores. Ed-Fi can also unify other operational systems including accounting and human resource systems.

The Flexibility and Responsiveness of the Ed-Fi Data Standard

The Ed-Fi core schema includes over 400 granular data elements, and the flexibility to add more as necessary. Ed-Fi enables these elements to be combined to accommodate continuously evolving accountability and performance metrics.

This flexibility means Ed-Fi can support current reporting needs and adapt to future ones. The definition of graduation rate, for example, is calculated by different states using up to nine data elements, such as entry date, entry grade level, withdraw date, and withdraw reason, which are typically dispersed across multiple information systems. The National Governors Association uses seven of these elements, New York uses six, and Texas has several variants but will standardize on eight in the future. If new reporting standards require additional data elements, these will be added to the core, interchange, or extension schema as needed. Moreover, these changes can be implemented quickly and easily.

Comparable Standards and Initiatives

The Ed-Fi solution shares some characteristics with other established and emerging educational standards, such as Common Education Data Standards (CEDS), schools interoperability framework (SIF), Post-Secondary Education Standards Council (PESC), national education data model (NEDM) and National Center for Education Statistics (NCES). However, Ed-Fi also supports a more teacher- and student-centric goal than these other standards, none of which focuses on the specific goal of improving student outcomes.

Ed-Fi does not replace other existing standards. It complements and enhances them; first, by sharing disparate data and translating it into element-level detail, and second, by offering broad coverage at the school, district or state level. This interoperability enables Ed-Fi to coexist among systems that states have already implemented, and enables states to build on prior investments in existing IT systems and processes.

WHY XML?

XML is well-suited for the Ed-Fi data standard because it is a widely used, vendor-independent technology standard designed to communicate both the structure and contents of documents. XML provides methods to automatically validate, query, and transform commonly used file types (e.g., XSD, Xpath, and XSLT). Moreover, because XML is in widespread use, software and technology vendors can employ existing tools and knowledge to implement Ed-Fi and reduce overall implementation costs.

HOW DOES THE COMMON EDUCATION DATA STANDARDS (CEDS) INITIATIVE IMPACT ED-FI?

The U.S. Department of Education's common education data standards (CEDS) were developed by a national consortium of education data stakeholders. This consortium provides valuable input, which is why Ed-Fi uses CEDS as a reference model and aligns to it wherever possible.

**The key differentiators between Ed-Fi and other standards and initiatives include:**

- **Focus on student performance.** The primary purpose of Ed-Fi is to integrate data from multiple information systems and give educators instant access to current, accurate student-specific data to increase academic growth and achievement. It does not attempt to replace schools' operational systems, compliance reporting systems (though it certainly can be used for that, as well) or systems for making budget allocation decisions.
- **Actionable intelligence.** Ed-Fi focuses on data all the way to the individual student level, unlike other initiatives that focus only on aggregate-level performance data (i.e., at the school, school district, or state level). Ed-Fi thus enables teachers to develop more effective, progress-based lesson plans when warranted.
- **K-12 focus.** Ed-Fi is currently focused on K-12 students. While it is not intended to address the complete set of data related to higher education students or those entering the workforce, the data standard will address connections to that information for the purpose of evaluating education outcomes. In the future, Ed-Fi might also address Pre-K students.
- **Vendor neutrality.** Successful Ed-Fi implementation does not require specific hardware or software choices. It is architected to fully integrate with existing infrastructure and accommodate future innovations.
- **Transparent governance.** Ed-Fi was developed with funding from the Michael & Susan Dell Foundation for public use and benefit. It will be governed by the future multi-state led Ed-Fi Alliance.
- **Flexibility.** Ed-Fi accommodates continuously evolving reporting requirements from district, state and federal agencies. See *The Flexibility and Responsiveness of the Ed-Fi Data Standard* earlier in this paper.
- **Support for vertical reporting.** Ed-Fi goes far beyond simple horizontal reporting by supporting push and pull models throughout the reporting chain. See *Use of Dashboards for Vertical Reporting*, below.
- **Ease of implementation.** Ed-Fi is built on familiar, widely-adopted XML standards and includes data elements with plain-English names and definitions that make sense in the education space, as opposed to complex jargon or codes.

Ed-Fi at a Glance

- Built in XML
- Vendor neutral – does not depend on the choice of vendor's software, hardware, operating system or development tools
- Free to license
- Implementable today
- Aligned and compatible with existing standards
- Designed to augment existing systems instead of replacing them
- Creation funded by the Michael & Susan Dell Foundation and governed jointly with a multi-state working group as part of the future Ed-Fi Alliance

Dashboards Powered by Ed-Fi

Educators require timely, relevant, and actionable information about their students' academic performance to achieve meaningful change and improve student outcomes. Educators with ready access to this information can monitor student performance, identify early warning signs and emerging growth opportunities, and intervene appropriately to ensure that all students avoid failure and reach their full potential.

Ed-Fi can convey this information through dashboards—browser-based collections of interactive charts, gauges, reports, and other visual indicators that an educator can use to monitor student performance on an ongoing basis. Views are tailored to the educator's role (teacher, principal/campus leader) or some other role.

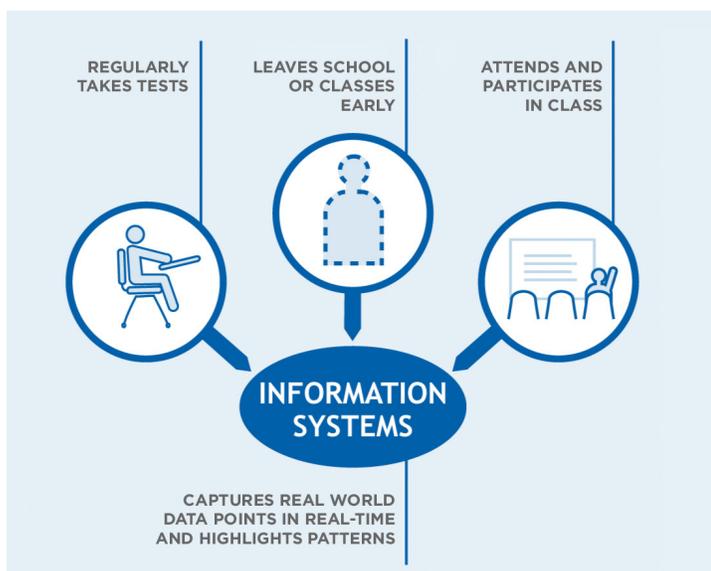


FIGURE 1

Data points, often from a variety of information systems, are pulled together into metrics that reflect real world events. Teachers need to know about more than test scores to know enough to make better instructional decisions for each and every student.

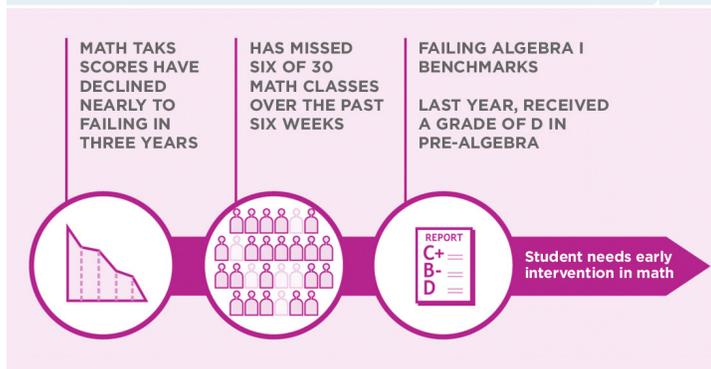


FIGURE 2

Leading indicators are designed to flag emerging issues before they become serious. An Ed-Fi-powered dashboard allows the teacher to capture the intervention selected and keep track of whether the intervention is working. Giving teachers access to the information and data that can help them analyze student performance, adjust instructional strategies and better determine what's working and what isn't working can improve student outcomes.

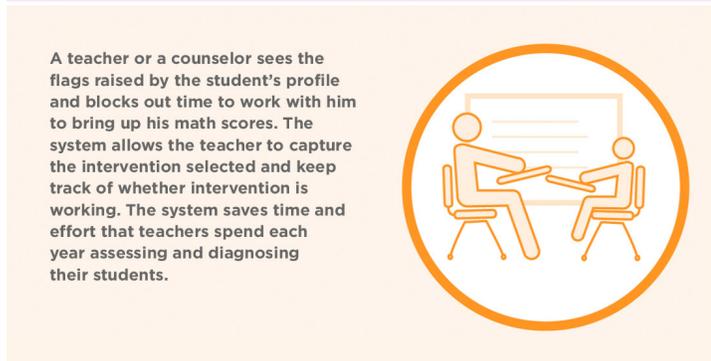


FIGURE 3

Teachers and principals must be given access to appropriate resources, training, and time during the school day to review information on their students on a regular basis. Teachers and principals must have access to effective interventions grounded in research.



Use of Dashboards for Vertical Reporting

These multiple views enable the dashboards to be used by district- and state-level policy makers, as well as to supplement or replace broader state-level or federal accountability and other reporting processes.

Multiple dashboard views also meet the needs of teachers, campus leaders and district leaders with highly differentiated responsibilities and information requirements. For example, the classroom teacher needs extremely granular student data, such as individual grades or standardized test scores, to monitor each student's progress. The campus-level educator needs access to the same data plus high-level information on the aggregated performance of students in order to understand campus performance and trends. The superintendent needs even higher-level data across multiple campuses to get a picture of the relative strengths and challenges of campuses within a district.

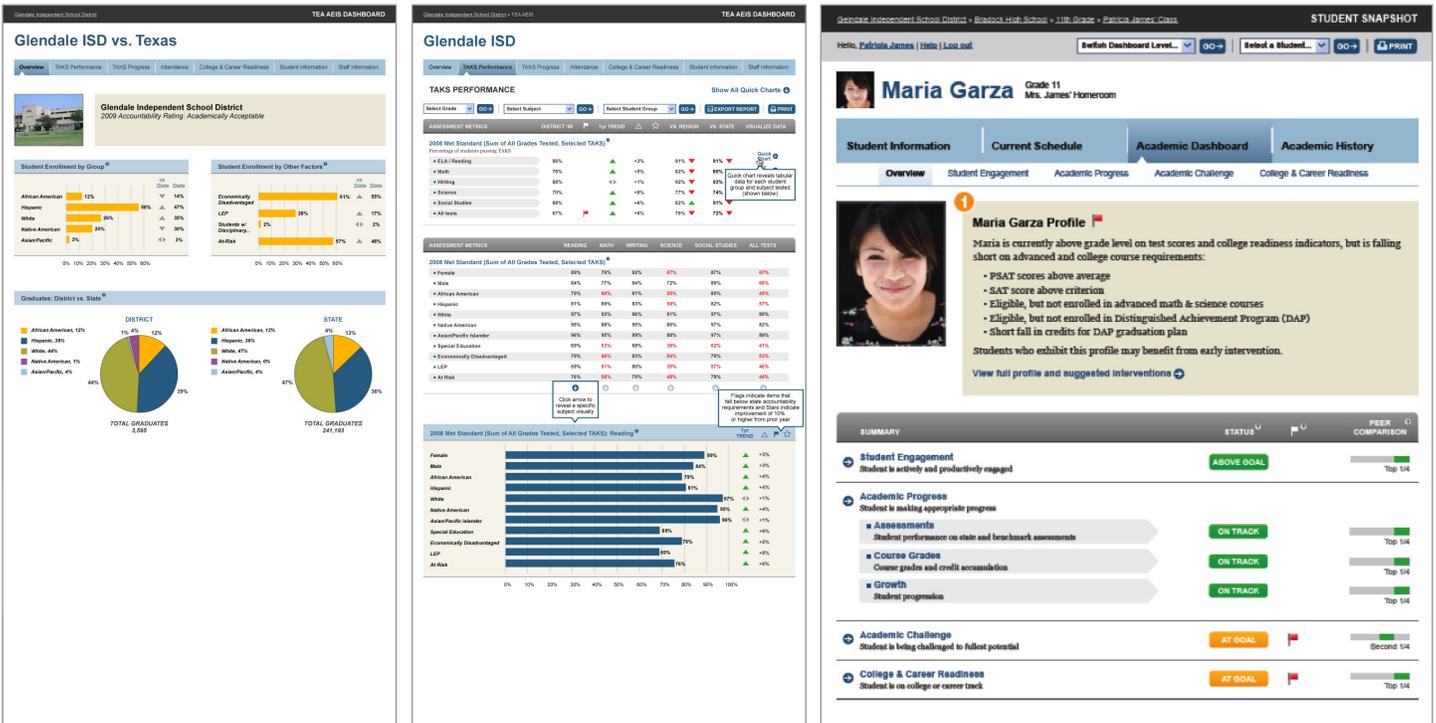


FIGURE 4

Ed-Fi enables easy transmission of data from the Student to State level, with consistent formatting and user-friendly reporting

Implementing Ed-Fi

In most states and other large-scale implementations a phased roll-out of Ed-Fi is appropriate. An implementation typically begins in a small number of pilot districts before being rolled-out state-wide. Any implementation and usage plan should take into account that implementing the Ed-Fi data standard and implementing Ed-Fi dashboards are different activities, with steps and requirements that vary depending on the situation and the role of the implementer.

The Ed-Fi data standard was designed to be extremely easy to implement. The primary requirements are expertise with industry-standard XML toolsets and business process modeling. Aspects of implementations can be performed by systems integrators or product vendors. For example:

- For a product vendor with an existing product, a data standard implementation may be as simple as exporting data to one or more of the Ed-Fi data interchange schema. For example, a student information system (SIS) vendor might implement a mechanism to supply data in the Ed-Fi student enrollment, student attendance and student grade data interchanges in order to feed data to a centralized data system.



- For custom data projects (e.g., most data warehouse and data integration projects), implementation would involve using the Ed-Fi data exchange framework for data transfers between systems. Ed-Fi defines several XML-based standard data transfer schema (e.g., student attendance, student enrollment, assessment results, etc.) and also provides an extensions framework for customizing the existing schema to meet specific needs.

The Michael & Susan Dell Foundation provides extensive documentation to support implementations of the data standard.

Implementation of **Ed-Fi-enabled dashboards** constitutes a separate project similar to other software development projects, with a cycle of requirement definition, analysis, development, testing and refinement. The Ed-Fi Dashboard Toolkit contains material that can be used throughout the development cycle. For example, the dashboard visualizations are helpful in eliciting requirements, the metric definitions can save work in the analysis phase, and the data exchange standards can save work in the development phase.

Licensing Ed-Fi

States, districts, schools or systems integrators can obtain a completely free, non-transferable license to use the Ed-Fi data standard. The license provides perpetual, unrestricted access and usage rights to the components identified in The *Ed-Fi Data Standard* section. For information about licensing, see www.ed-fi.org/contactus.

A license to use the Ed-Fi data standard includes sample dashboard views and a copy of the relational database model and metrics that define performance management indicators, which enables third-party vendors to build dashboards.

The cost to implement Ed-Fi depends on several factors. Any fees would be charged to states or school districts by third party vendors (typically systems integrators), not by the Michael & Susan Dell Foundation or the Ed-Fi Alliance. Additional costs will vary based on the complexity of the implementation and several other factors, such as your choice of application vendor.

Ed-Fi: The Right Choice for the Education Challenges of Today and Tomorrow

The time to extract more value from school information technology is now. We need to shift the focus from simply collecting aggregate data to empowering educators with the actionable student-level insights they need to improve the lives of every K-12 student in the United States. Start transforming education in your state, district, school and classroom today with Ed-Fi.

Learn more at www.ed-fi.org

Email: info@ed-fi.org

PO Box 163867
Austin, TX 78716
Tel. +1 512 600 5500

Department of Education State of Arizona

Ed-Fi Frequently Asked Questions (FAQ)

**Leading to a proposed implementation of the Ed-Fi and Common
Education Data Standards in the State of Arizona**



***Enabling Education Intelligence (EI) for the State of
Arizona***

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General

What is Ed-Fi?

Ed-Fi is an XML-based data specification combined with a free tool suite developed by the Michael & Susan Dell Foundation to improve student achievement in the K-12 education sector. Ed-Fi extracts student information from a variety of educational systems, and then standardizes, integrates and communicates it to educators and other parties through Web-based dashboards, reports and other applications

Ed-Fi equips educators with actionable insights, so they can then make informed decisions on steps to improve the academic outcomes of students. School and district administrators, and state and federal agencies can also use this information as a supplement or replacement for broader state-level or federal accountability reporting purposes.

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From a technical perspective, what is Ed-Fi, and what does it include?

The Ed-Fi solution is an XML-based standard for exchanging student data among information systems. Ed-Fi consists of the following components, which are segmented based on their intended use and structured to ensure maximum flexibility for any given scenario:

- **Unifying data model** – This is the central XML schema definition (XSD) that defines the common data elements on which the rest of the standard is based. These common elements include the attributes, types and structures. The unifying data model, also known as the core schema, serves the majority of schools' educational needs and provides the building blocks for additional schemas, such as the interchange and extension schemas used for more specific situations.
- **Data exchange framework** – The data exchange framework includes the interchange schemas that depend upon the core schema and serve as connectors between systems to send and receive information. Interchange schemas differ from the core schema in that each interchange schema defines the data exchange in highly specific scenarios, while the core schema defines a broad set of objects used in many general situations. Vendors can create new interchange schemas to accommodate new scenarios.
- **Application framework** – The Ed-Fi application framework includes a technical implementation guide that provides prescriptive guidance and general concepts essential to creating Ed-Fi-based applications. This application framework also includes a sample relational database model to help accelerate application development.
- **Sample dashboards with metrics** – The Ed-Fi solution includes sample dashboard elements and educational metrics that elementary and secondary teachers have identified as critical to understanding students' strengths and areas for improvement. These elements and metrics are the building blocks for building functional dashboards.

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What is an Ed-Fi dashboard?

Ed-Fi-powered dashboards are browser-based collections of interactive charts, gauges, reports and other visual indicators that give educators on-demand access to timely, relevant and actionable information about student performance.

These Ed-Fi powered dashboards enable 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.

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Does the Ed-Fi standard include dashboards?

No. The Ed-Fi standard includes a copy of the relational database model and sample metrics that define performance management indicators (which assume the existence of a relational database). These elements enable dashboards to be developed by vendors, but no out-of-the-box dashboards are included with the Ed-Fi license. We do provide sample visuals of dashboards, however.

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What kinds of systems and data can be made interoperable using Ed-Fi?

The Ed-Fi data standard can integrate any information systems that collect, manage, report on or provide analysis for student data. For example: student information systems (SIS), grade book applications, curriculum and lesson planning systems, and benchmark testing and reporting systems.

The kinds of data exchanged between these systems might include, for instance, records on students' grades, absence rates, standardized test scores and transcripts.

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What use cases can Ed-Fi support?

The Ed-Fi standard supports many scenarios including but not limited to:

- Moving data between systems within a local education agency (LEA)—for instance, between a grade book application and the student information system
- Moving data between LEA and state education agency (SEA) systems to provide data to a statewide longitudinal data warehouse
- Accepting data from external sources, such as testing services
- Aggregating data from different sources into an operational data store or data warehouse
- Transferring student transcript records and other data among local education agencies when students move from one school to another
- Providing data to state education agencies or to federal agencies to meet accountability or other requirements
- Developing dashboards or reporting tools that enable educators to easily monitor student progress in real-time so they can quickly identify early indicators of success or failure, and intervene with relevant, timely measures

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Why XML?

Ed-Fi is built on XML standards for ease of implementation. XML is a widely adopted, vendor-independent technology designed to communicate both the structure and contents of documents, and to provide methods of automatically validating, querying and transforming XML files (e.g., XSD, Xpath and XSLT). Moreover, XML is itself a technology standard that is in widespread use, so software and technology vendors, and internal IT staff can employ existing tools and knowledge to implement Ed-Fi, which reduces both risk and total cost of implementation.

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Who created and owns Ed-Fi?

The Ed-Fi solution was developed with funding from the Michael & Susan Dell Foundation, a philanthropic organization dedicated to enriching the lives of students. Input was solicited from vendors, state education agencies and local education agencies. Future technical developments will be guided by foundation and the Ed-Fi Advisory Council, a group of state education agency representatives from states that are implementing Ed-Fi.

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How much does it cost to license, implement and use Ed-Fi?

States, districts, schools, vendors or service providers can obtain a completely free, non-transferable license to use the Ed-Fi data standard, which provides perpetual, unrestricted access and usage rights to its components. For information about licensing, please [contact us](#).

A license to use the Ed-Fi data standard includes sample dashboard views and a copy of the relational database model and metrics that define performance management indicators. Together, the example database model and sample metrics give third-party vendors the information needed to build dashboards that address specific state and district needs.

The cost of implementing Ed-Fi depends on complexity of the implementation and several other factors. These factors include (but are not limited to) choice of application vendor and implementation plan variables such as whether internal staff or external vendors (e.g., system integrators) will be used. Any and all fees will be charged by third party vendors. The Michael & Susan Dell Foundation and the Ed-Fi Advisory Council will not charge for licensing, usage, or later versions of or modifications to Ed-Fi.

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How is Ed-Fi being rolled out nationwide?

State education agencies, schools and districts, implementation partners, tool vendors, assessment providers and other parties are working to promote nationwide adoption of the Ed-Fi data standard with support from the Michael & Susan Dell Foundation.

As of July 2011, five states, covering 510,500 teachers and 7.4M students, have begun implementing the standard. These states are implementing Ed-Fi in a variety of ways depending on the complexity and stage of their projects.

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Comparable Standards and Initiatives

Doesn't something like Ed-Fi already exist?

The Ed-Fi solution aligns with the Common Education Data Standards (CEDS) and shares some characteristics with other established and emerging educational standards. Using Ed-Fi enables states to implement CEDS in a practical, sustainable manner and supports the teacher- and student-centric purpose that Ed-Fi embodies.

Rather than replacing other established and emerging educational standards, Ed-Fi complements and enhances them, first, by sharing disparate data and translating it into element-level detail, and second, by offering broad coverage at the school, district or state level. This interoperability enables Ed-Fi to coexist among systems that states have already implemented, and enables states to build on prior investments in existing IT systems and processes. Ed-Fi fills the persistent need in the education sector to harness the power of data already collected in school districts and states. Key unique features of Ed-Fi include:

- **Focus on student performance.** The primary purpose of Ed-Fi is to integrate student-level data from multiple information systems and give educators instant access to current, accurate student-specific data to increase academic growth and achievement. It does not attempt to replace schools' operational systems, compliance reporting systems or systems for making budget allocation decisions.
- **Actionable intelligence.** Ed-Fi focuses on data all the way to the individual student level, unlike other initiatives that focus only on aggregate-level performance data (i.e., at the school, school district, or state level). Ed-Fi thus enables teachers to develop more effective, progress-based lesson plans when warranted.
- **K-12 focus.** While it is not intended to address the complete set of data related to higher education students or those entering the workforce, the data standard will address connections to that information for the purpose of evaluating education outcomes. In the future, Ed-Fi might also address Pre-K students.
- **Vendor neutrality.** Successful Ed-Fi implementation does not require specific hardware or software choices. It is architected to fully integrate with existing infrastructure and accommodate future innovations.

- **Transparent governance.** Ed-Fi was developed with funding from the Michael & Susan Dell Foundation for public use and benefit. It will be governed by the future multistate-led Ed-Fi Alliance.
- **Flexibility.** Ed-Fi accommodates continuously evolving reporting requirements from district, state and federal agencies.
- **Support for vertical reporting.** Ed-Fi goes far beyond simple horizontal reporting by supporting push and pull models throughout the reporting chain.
- **Ease of implementation.** Ed-Fi is built on familiar, widely-adopted XML standards and includes data elements with plain-English names and definitions that make sense in the education space, as opposed to complex jargon or codes.

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Why develop another standard from scratch?

Other educational data standards do not link the information chain at the right level of detail, coverage and completeness to address problems that affect the entire U.S. educational system. For instance, no existing standard was specifically designed so that:

- Educators can quickly and easily access comprehensive and timely student records on demand
- State leaders can systematically and reliably compare program performance across different schools and districts
- State and local agencies can identify problematic trends and issues early, before they affect funding or accountability decisions

Ed-Fi addresses all those needs and more.

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How does the Common Education Data Standards (CEDS) initiative impact Ed-Fi?

The U.S. Department of Education's Common Education Data Standards initiative has been a critical and important leadership effort that includes a national consortium of stakeholders from across the education sector. Ed-Fi uses CEDS as a reference model and aligns to it wherever possible. Specifically, many of the K12 CEDS data elements are included in the first release of Ed-Fi. In addition, Michael & Susan Dell Foundation representatives participate on the CEDS stakeholder and technical working groups to ensure that needs identified for CEDS can be accommodated by Ed-Fi.

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Governance, Versioning, Releases, and Roadmap

Who governs Ed-Fi?

The Michael & Susan Dell Foundation governs the Ed-Fi data standard with direction from the Ed-Fi Advisory Council, a recently-convened group of state education agency representatives from states which are implementing Ed-Fi. Ed-Fi Advisory Council representatives are primarily technology-focused professionals, many of whom are responsible for large-scale educational data systems being implemented with Race to the Top and State Longitudinal Data Systems grant funds.

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Is Ed-Fi open source?

Organizations can license the Ed-Fi source code at no cost, but we do not typically implement code contributions from the community like most open source projects. We do accept comments and recommendations for changes using the [feedback form](#) on the Ed-Fi.org website.

It is important to note that Ed-Fi is an *open specification*, which means that it is free to adopt and that its functionality can be easily extended by third party vendors to suit a state's or district's specific needs. However, Ed-Fi is not packaged software.

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Will Ed-Fi be versioned?

Yes. The standard will evolve over time, as new elements are added to the schema in response to newly-identified needs. These changes will be versioned to ensure that any entity which implements the Ed-Fi standard can verify which version is in use. Timing of release cycles and the version conventions for future releases have not yet been determined.

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How can I comment on Ed-Fi?

The Ed-Fi.org website includes a [feedback form](#) that allows outside parties (including state and local agency representatives, vendors, educators and others) to provide input on the Ed-Fi data standard for future releases. The Michael & Susan Dell Foundation will review and prioritize these submissions, in coordination with the Ed-Fi Advisory Committee, for incorporation into future releases.

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Implementation

What is involved in a product vendor implementation of the Ed-Fi data standard?

For a vendor with an existing product, a data standard implementation may be as simple as exporting data to one or more of the Ed-Fi data interchange schema. For example, in order to feed data to a centralized data system a student information system (SIS) vendor might output data using an Ed-Fi format, such as the Ed-Fi student enrollment, student attendance and student grade data interchanges.

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What is involved in implementing the Ed-Fi data standard for a custom data integration project?

For custom data projects (e.g., most data warehouse and data integration projects), implementation would involve using the Ed-Fi data exchange framework for data transfers between systems. Ed-Fi defines several XML-based standard data transfer schema (e.g., student attendance, student enrollment, assessment results, etc.) and also provides an extension framework for customizing the existing schema to meet specific needs.

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Must I use particular vendors' offerings to implement Ed-Fi?

No. Ed-Fi is a vendor-neutral standard. Organizations that implement Ed-Fi do not need to use any particular vendor's software, hardware, operating system, development tools or implementation services.

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Are the Ed-Fi data exchanges difficult to implement?

Ed-Fi is built on widely-adopted XML standards so vendors and in-house IT staff can implement Ed-Fi with little risk and a low total cost of implementation. Moreover, Ed-Fi data elements avoid complex jargon and codes and use plain-English names and definitions that make sense in the education space to further simplify implementation.

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Can the Ed-Fi dashboards be rolled-out in phases?

Yes. In most large-scale implementations, phased rollouts make sense. An implementation will typically begin in a small number of pilot districts before being rolled out statewide.

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What is involved in building Ed-Fi-enabled dashboards?

Implementation of Ed-Fi-powered dashboards is similar to other software development projects, with a cycle of requirement definition, analysis, development, testing and refinement. The sample dashboards can be used throughout the development cycle to elicit requirements and sample metrics can save work in the analysis phase. Ed-Fi data exchange standards can save work in the development phase.

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Does implementing Ed-Fi-powered dashboards require that existing systems be replaced?

No. Ed-Fi-powered dashboards leverage data from existing campus, district and state data systems. By facilitating interoperability between the dashboards and existing systems, the Ed-Fi data standard augments the value of those existing systems.

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Where has Ed-Fi been implemented?

The first Ed-Fi implementations will go live in 2011. As of July 2011, five states, covering 510,500 teachers and 7.4M students, are implementing the standard. The Ed-Fi Alliance, a coalition of states, schools and districts, implementation partners, tool vendors, assessment providers and other parties, is working to promote the nationwide adoption of the Ed-Fi data standard with support from the Michael & Susan Dell Foundation.

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Will implementation work performed by vendors be sharable with others?

Yes, if the vendor wishes. The Michael & Susan Dell Foundation will facilitate the sharing of work as long as it meets the goals of the Ed-Fi Advisory Council and has applicability to a wide range of needs.

The sharing of work would most likely include either:

- Compositions of the core schema in unique ways to meet a specific need. These concrete schemas could be posted on EdFi.org for others to use. If appropriate, they may ultimately be integrated into the standard.
- Supplementary documentation, code snippets, best practices, etc., which can be freely shared with others.

Permission from the vendor will always be obtained prior to any sharing.

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Can a vendor charge for work they perform, or new things they create using Ed-Fi?

Yes. As a matter of licensing policy, the Michael & Susan Dell Foundation does not allow a vendor to charge for work the foundation has already performed. Vendors may, however, charge for any value-added work beyond that. Any and all fees related to Ed-Fi will be charged by third party vendors. The Michael & Susan Dell Foundation and the Ed-Fi Advisory Council will not charge for licensing, usage, or later versions of or modifications to Ed-Fi.

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How much does it cost to implement Ed-Fi?

The cost of implementing Ed-Fi depends on complexity of the implementation and several other factors. These factors include (but are not limited to) choice of application vendor and implementation plan variables such as whether internal staff or external vendors (e.g., system integrators) will be used. Any and all fees will be charged by third party vendors. The Michael & Susan Dell Foundation and the Ed-Fi Advisory Council will not charge for licensing, usage, or later versions of or modifications to Ed-Fi.

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How can a vendor contribute to the Ed-Fi data standard?

We anticipate there will be two general types of contributions:

- Recommendations to change the core. These changes require control and approval processes, as changing the core schema could break others' implementations.
- Recommendations to add to the core. These changes would need to be reviewed for applicability to other users (i.e., they are not one-offs), but additions will not break the core schema.

To make recommendations or contributions to the standard, please visit the [contact us](#) page.

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How will the Michael & Susan Dell Foundation support systems integrators?

One of the foundation's goals in developing the Ed-Fi standard was to address integrators' needs. We have worked to do that by building Ed-Fi on proven, familiar tools such as XML, and by providing robust online documentation. Beyond that, it is the foundation's intention to establish and nurture a vendor community with systems integrators as a key faction. Details will be forthcoming.

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How does a student information system (SIS) map to Ed-Fi?

Ed-Fi specifies an XML file format (an XSD file) for several common data interchange scenarios. To map to an SIS (which typically contains data such as student contact information, grades, attendance and class schedules), Ed-Fi represents the information in the SIS as a data interchange.

An SIS system that "adopted" the Ed-Fi standard would provide a feature to import and/or export one or more of the data interchanges. For instance, an Ed-Fi-compliant SIS system would enable simple, interface-based commands such as "export to Ed-Fi Student Information Exchange," as opposed to what is commonly done today, which is to create a custom extraction for every particular exchange.

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Standards Compliance

What is the minimum level of effort required to maintain compliance with the Ed-Fi data standard?

The criteria for compliance are evolving. Currently, you are compliant if:

- Your data output validates against the core schema, or
- You have adopted one of the published concrete exchange schemas, which by definition will validate against the core schema

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Why is it important to maintain Ed-Fi compliance?

Ed-Fi is intended to be used nationally. Adopting the standard and maintaining compliance is critical first because it will ensure reporting continuity, data integrity and compliance with requirements across district, state and federal levels. Second, compliance allows states to facilitate the transfer of student information as they transition from Pre-K to K12 and from K12 to post-secondary systems and into the workforce. Adoption and maintenance of the standard also facilitates the transfer of transcript information across state lines when students move so that teachers have the information they need to meet student needs from day one.