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Benefits of an Integrated Data System

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Over the past ten years, education data systems have undergone a significant transformation. They have moved from independent silos of aggregate data around a specific program or sector (often based on funding streams and reporting requirements) to a repository of longitudinal, linked, unit record data with connections across programs and sectors to support a comprehensive, integrated view of students, schools, and programs. Statewide longitudinal data systems (SLDSs) have been developed in every state[1] to support data-informed decision making throughout the education system.

What is an Integrated Data System?

Data integration is the process of "*combining data from disparate sources into meaningful and valuable information*."[2] When applied across education data systems, this means ensuring the data from various sectors and their program areas can be seamlessly combined to provide a cohesive picture of a student or school.

For the past decade, many states have been building, managing, and enhancing longitudinal data systems that contain student level data connected over time. The technical architecture for SLDSs

Parents, students, legislators, school administrators, educators, community leaders and program managers all need information in order to make effective decisions regarding education. For example: Legislators need information to determine what programs to fund as well as what laws and policies to support. Parents and students need information to decide what schools to attend, what classes to take, and what programs to enroll in.

[1] Data Quality Campaign: 2014 Executive Summary: http://www.dataqualitycampaign.org/your-states-progress/10-state-actions/

[2] ECIDS Glossary: https://slds.grads360.org/#program/ecids-toolkit:-appendix---glossary

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vary,[3] but in the best situations these systems include data not just about the student's demographics and academic progress, but also about programs in which the student has participated, such as special education, career and technical education (CTE), English language learner programs, migrant education, after school tutoring, and others. A data system that integrates data across programs and sectors provides a rich source of information for program administrators, school leaders, researchers, and policymakers to understand what works and how to invest resources.

[3] Centralized vs. Federated: State Approaches to P-20W Data Systems: https://nces.grads360.org/services/PDCService.svc/GetPDCDocumentFile?fileId=7122

Master Data Management and Data System Integration

Master Data Management (MDM) is a concept that is closely tied to data integration. MDM is a set of policies, tools, and processes that establish the "master" for various data entities (for example: student, school, teacher, course) as well as the method for maintaining that data. Once the "system of record" has been established, maintenance procedures may include[4]:

- Data collection from various source systems
- Transformation into a format for MDM processing
- Data consolidation and deduplication into the master record
- Error detection and correction
- Master data distribution/synchronization to source systems

These steps for ensuring consistency across data systems may require extensive manual effort, or may be automated, or through data system integration may be minimized or even eliminated.

[4] http://www.dataintegration.info/master-data-management

What's the Return on Investment for Data System Integration?

Moving from data silos to an integrated data system is not without costs, but the payoff can be substantial – not only in dollars and human resources, but in the increased value and usability of the data. For example, integration of special education data into the SLDS can allow the Special Education program staff to analyze the progress of students with disabilities as compared to the total student population, identify schools and districts whose special education students have high achievement levels (enabling identification and dissemination of best practices), and more easily extract data for federal ED*Facts*[5] and IDEA[6] reporting.

Challenges and costs that may be associated with data integration:

- Getting buy-in from all partners
- Establishing common definitions of terms and data elements
- Governance of the integrated data, including policies and procedures
- Timing and synchronization of data collections
- Increased complexity of the data system (elevating the criticality of enterprise–wide access controls)

Potential benefits of an integrated data system:

- Reduces staff burden for schools through elimination of duplicate data entry
- Reduces staff burden for the state education agency by minimizing efforts for reconciling inconsistent data
- Increases data quality – for data collected, reported, and used
- Provides the ability to cross-validate data and minimizes the risk of inconsistent reporting

[5] The ED*Facts* Initiative: http://www2.ed.gov/about/inits/ed/edfacts/index.html

[6] IDEA 618 Data: http://www2.ed.gov/programs/osepidea/618-data/collection-documentation/index.html

- Enables cross-program analysis and extraction of information that would otherwise be difficult or impossible (e.g., achievement levels of special education students who also participate in CTE)
- Allows the program area to provide context and meaning to research and evaluation efforts
- Provides the program area with evidence to evaluate and demonstrate the effectiveness of the program
- Improves communication, collaboration, and relationships between program areas and data system partners (e.g., IT)
- Reduces security risks by minimizing the number of systems for storage and data access
- Reduces system costs by eliminating the need to maintain and reconcile redundant and inconsistent data and processes

Related Resources

SLDS Brief: Centralized vs. Federated: State Approaches to P-20W Data Systems (October 2012)
https://ciidta.grads360.org/#communities/pdc/documents/7301

SLDS Early Childhood Brief: Getting Started: Incorporating Head Start Data in an SLDS (November 2012)
https://ciidta.grads360.org/#communities/pdc/documents/7302

SLDS Topical Webinar Summary: Measuring and Documenting Return on Investment (April 2013)
https://ciidta.grads360.org/#communities/pdc/documents/7303

Data Governance SLDS Community of Practice
https://nces.grads360.org/#communities/data-governance

Stakeholder Engagement SLDS Community of Practice
https://nces.grads360.org/#communities/stakeholder-engagement

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