



SLDS Issue Brief

SLDS Uses of CEDS: Implementing and Governing

Across the country, states and territories face challenges as they establish, implement, and sustain their statewide longitudinal data systems (SLDSs). The Common Education Data Standards (CEDS) initiative and its associated tools can assist SLDS programs with a variety of efforts throughout the lifecycle of their data systems, including planning and building the system; implementing data sharing and governance; and using and sustaining the system into the future.

This publication spotlights how one state leverages CEDS and its tools to support SLDS implementation and data governance. It is part of a series of briefs illustrating how state and territory SLDS teams have used CEDS and its tools to solve challenges at different stages of data system development.

Planning and
Building

Implementing and
Governing

Using and
Sustaining

Implementing and Governing: Michigan



Michigan's Center for Educational Performance and Information (CEPI), located in the State Budget Office, manages a centralized SLDS that draws data from many state agencies. In addition to data from K12 local education agencies, CEPI gathers and manages datasets from the Michigan Department of Education; public community colleges and four-year universities; state health, treasury, workforce, police, and public safety programs; and the National Student Clearinghouse.

CEPI provides data to its largest user base, the public, by publishing vast amounts of information and data visualizations to the MISchoolData.org website. CEPI's data are also used by state agencies, the legislature and governor's office, and researchers both within and outside of Michigan.

Challenges

Over time, CEPI's data management and reporting responsibilities have expanded to involve data from more state agencies and source data systems. This expansion reinforces the need for strong data governance procedures and accurate business glossaries to maintain a current catalog of the data contained in the SLDS and its source systems.

Additionally, each source data system contains longstanding data elements whose definitions may have changed over time, as well as newer elements that are added to meet evolving data needs. CEPI meets at least annually with data teams from each content area to discuss source system updates needed to meet new reporting requirements or policy priorities. Changes to data element definitions can complicate comparing reports over time and using data longitudinally. Once Michigan began building its centralized SLDS in 2009, data element changes in source systems also required that changes

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*For more information on the IES SLDS
Grant Program or for support with system
development, please visit
<http://nces.ed.gov/programs/SLDS>.*

be made to CEPI's extract, transform, and load (ETL) procedures and the automated processes it had built for compliance reporting without a data governance process.

Solutions

After the first CEDS data model was released in 2010, CEPI began exploring using it as a means of guiding and stabilizing its data element revision process. The agency has used CEDS to strengthen its data governance by aligning Michigan data systems to the CEDS model and by incorporating CEDS into its annual review of data elements.

Mapping data systems with CEDS Align

In 2014, CEPI worked with CEDS to map the data elements in Michigan data systems to the CEDS data model. CEDS technical assistance experts drafted maps using the CEDS Align tool for five Michigan systems that collect data for the following content areas:

- P-20 student enrollment, demographics, and program participation
- P-12 school finance and accounting
- P-12 staffing and assignments
- School directory
- Postsecondary enrollment, transcripts, and awards

To ensure that the Michigan data elements were accurately matched to CEDS element names and definitions, CEPI undertook a highly structured validation project. CEPI held meetings and presentations with its Data Systems division managers and analysts to explain CEDS, the state's goals for aligning its data systems with CEDS, and the process for validating the Align maps. The CEDS coordinator at CEPI also created resources to support the validation process, including a project plan and timeline, resources assignment spreadsheet, "how to" and "quick tip" guides for data alignment validators, and FAQ and issue logs to capture lessons learned.

After validating the maps, CEPI shared its five data system maps within CEDS Align so that Data Systems managers, other state SLDS teams, CEDS stakeholders, and researchers can view the data elements they contain.

CEPI's experience during the validation project led the agency to suggest enhancements to functionality of the CEDS Align tool. These enhancements, which have been made to the tool, include the addition of a checkbox indicating whether a state data alignment validator has validated a data element and the ability to upload a modified version of a map that was exported from Align. Additionally, many of CEPI's project plans, templates, and other documentation are now part of a Mapping Toolkit available in the CEDS Coordinators section of the CEDS website.



CEDS Resources

CEDS Align

<https://ceds.ed.gov/align.aspx>

With CEDS Align states can map data elements from their SLDS or source data systems to standardized element names and definitions in the CEDS data schema. These maps can be used to match and compare data elements in different systems using the CEDS elements as a crosswalk.

CEDS Connect

<https://ceds.ed.gov/connect.aspx>

Connect allows users to build and publish "Connections" that identify the CEDS standard data elements, business rules, and calculations they will need to address a question. Users can also browse CEDS's library of existing Connections to take advantage of Connections from other states to meet their needs.

Publications and Presentations

<https://ceds.ed.gov/publications.aspx>

CEDS offers topical briefs, training materials, and videos related to each of its tools.

Annual review of data elements and alignment to CEDS

CEPI has implemented a regular cycle to meet with content area data managers and program office staff for its data systems to plan changes to data element definitions and collection procedures to support new requirements. Data element definitions created before the CEDS alignment project were not updated to match CEDS, but proposed changes are now reviewed to ensure that they remain comparable to CEDS definitions or that any differences due to local needs are documented. If new data elements are added to a collection, CEPI uses CEDS element names and definitions from the start, where possible. CEPI submits comments on draft versions of the CEDS standard each year. When CEDS releases information about data elements to be introduced, revised, or removed from its data model, CEPI's CEDS coordinator works with the CEPI Data Systems team and data managers at its partner agencies to compare CEDS elements to Michigan's existing data systems. The state compiles and provides feedback to CEDS on whether it collects the element, how it is used, its definition and option sets, and its similarity to or difference from the CEDS draft. In addition to helping shape future

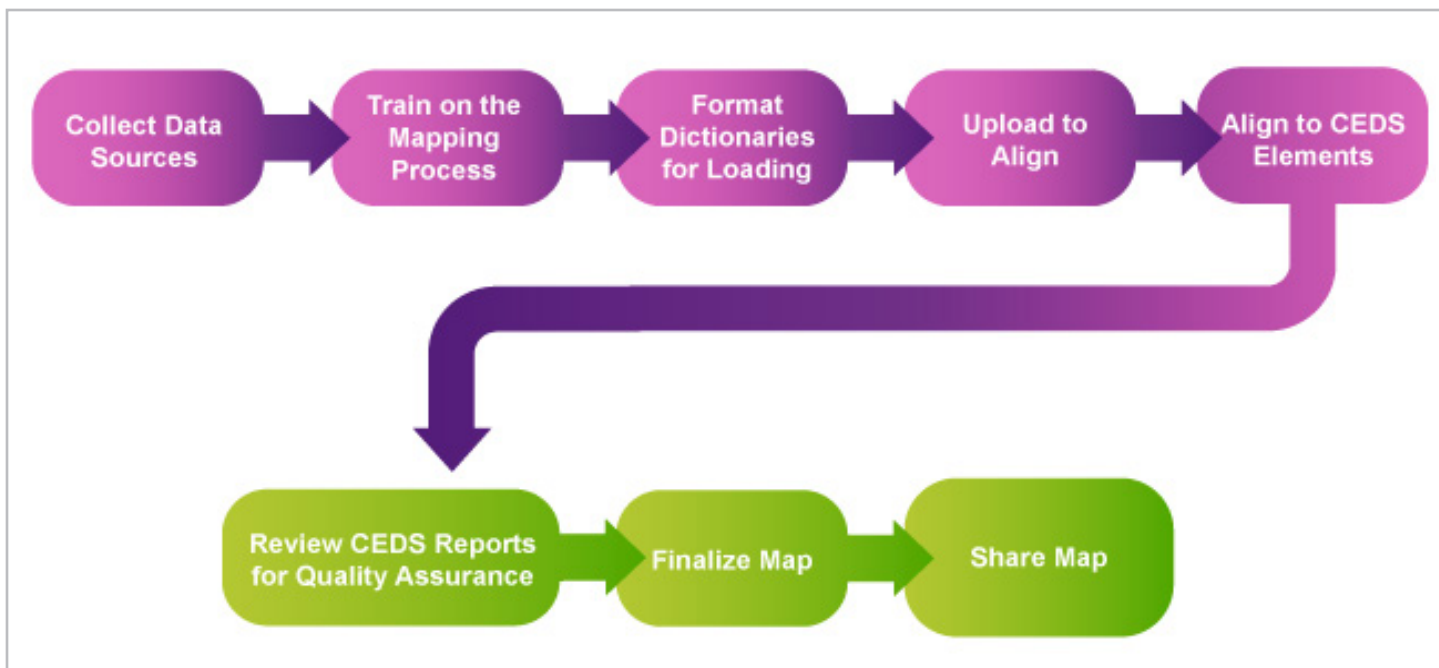


Figure 1. The process for mapping state data systems to CEDS through CEDS Align includes multiple steps that can be taken by a state team alone or with support from CEDS technical assistance experts. CEPI's alignment validation project brought a systematic approach to reviewing the CEDS Align reports for quality assurance to ensure that its five data system maps were accurate before being finalized and shared.

versions of CEDS, this process generates a high level of awareness and familiarity with CEDS among the CEPI team and the state's data managers.

Next Steps

Mapping new data elements

Following program restructuring in the state, CEPI is taking responsibility for a postsecondary finance data collection previously managed by a workforce development program. The agency will work with CEDS technical assistance experts to map the new collection to CEDS using CEDS Align.

Information management

Although CEPI carefully manages and documents its data definitions, tracing the lineage of data elements remains a challenge. Data lineage reveals changes to elements and their metadata that happen over time or as the data move through data systems, applications, and outputs such as reports and data files. Purchasing a metadata management tool is expensive, and implementing a prototype metadata repository tool developed internally by CEPI was a time consuming and resource intensive process. Michigan's state government is preparing to introduce a new business glossary tool that includes lineage capabilities, and CEPI leaders are investigating participation in a pilot implementation. As part of this effort, CEPI has provided the state with business glossary categories that align to CEDS domains.

Expanding data sharing and use

To help serve the state's more than 900 school districts, Michigan created five regional Data Hubs that facilitate data exchanges among the districts and state agencies. The exchanges are built on the Ed-Fi data model, and CEDS data definitions are used to exchange data among the hubs and between the hubs and the state. As the Data Hubs mature and more districts use them, CEPI plans to explore ways to provide the districts with more data from the SLDS using the CEDS data model as a common standard.

CEPI is also developing a standardized set of research data files covering its most requested data. These files will help streamline CEPI's process for providing data for research by allowing researchers to obtain some data without submitting customized data requests. The elements included in the proposed pre-generated data files eventually will be mapped to CEDS definitions so that researchers who are unfamiliar with Michigan's data systems can understand and use the data more easily.

In the future, CEPI plans to use the CEDS Connect tool to help document the data elements, calculations, and business rules needed to meet state and federal reporting requirements.

Lessons Learned

Several aspects of CEPI's use of CEDS to support data governance have made its efforts successful, including the following.

Take a project management approach

CEPI's work to align multiple state data systems to a set of common standards is supported by strong project management procedures. CEPI's CEDS coordinator creates a project plan at the beginning of the validation and draft comment process that saves time by ensuring that staff members were aware of their responsibilities and the dependencies among project tasks. The plan also allows for consistent training and communications with the CEPI Data Systems team and data managers in different agencies. As these staff members used CEDS in the validation process, they became familiar with the data model and its associated tools and helped raise awareness of CEDS throughout the state.

Align data definitions 'upstream'

By mapping its data elements to CEDS as close to the source data system as possible, CEPI tries to minimize confusion and problems as the data move "downstream" into additional systems or reports. The CEDS Align

maps increase stakeholders' understanding of how the data are defined and used. When planning and defining new data elements, basing the new elements on CEDS ensures that those elements will be more easily understood across agencies and among stakeholders from the start.

Engage with the tools

CEPI's annual data reviews and participation in CEDS draft comment periods help keep data managers engaged in maintaining their data systems' alignment to the CEDS model. These efforts also give CEPI an opportunity to shape future versions of CEDS and its tools to meet its needs. The alignment verification checkbox and upload report that CEPI recommended are now part of the CEDS Align tool, and they will help CEPI conduct its Align tasks more efficiently. As CEPI expands the data collections it manages, it continues to participate in conversations with CEDS to ensure that future versions of the tools reflect the requirements of its work.

Additional Resources

CEDS and SLDS – Aligning Efforts: SLDS Issue Brief

<https://slds.grads360.org/#communities/pdc/documents/5232>

Michigan Center for Educational Performance and Information

<http://www.michigan.gov/cepi/>

MI School Data

<https://www.mischooldata.org/>

Privacy Classifications for Washington's Data: SLDS Spotlight

<https://slds.grads360.org/#communities/pdc/documents/7901>

Use of the Common Education Data Standards (CEDS): SLDS Webinar

<https://slds.grads360.org/#communities/pdc/documents/7906>

CEDS Resources

Common Education Data Standards (CEDS)

<https://ceds.ed.gov/Default.aspx>

Common Education Data Standards Mapping Toolkit

<https://ceds.ed.gov/MappingToolkit.aspx>

Michigan's CEDS Align Maps:

- Michigan Student Data System (MSDS) SY 2014-2015
<https://ceds.ed.gov/MapShare.aspx?mapId=672&shareId=60599250-a705-4d0c-93c2-aef1489667a3>
- Michigan Financial Information Database (FID) FY 2013-2014
<https://ceds.ed.gov/MapShare.aspx?mapId=692&shareId=e09c2783-0495-4f5e-9079-5328506c07fe>
- Michigan Registry of Educational Personnel (REP) SY 2014-2015
<https://ceds.ed.gov/MapShare.aspx?mapId=690&shareId=795ca6fe-f9fc-4948-9532-728fafc333d4>
- Michigan Educational Entity Master (EEM) (As of 8/14/2015)
<https://ceds.ed.gov/MapShare.aspx?mapId=694&shareId=eadbc585-a00c-4fca-af54-3abdf179f8b8>
- Michigan Student Transcript and Academic Record Repository (STARR) 2015
<https://ceds.ed.gov/MapShare.aspx?mapId=712&shareId=0bf52768-3603-4bd9-9356-617260254370>