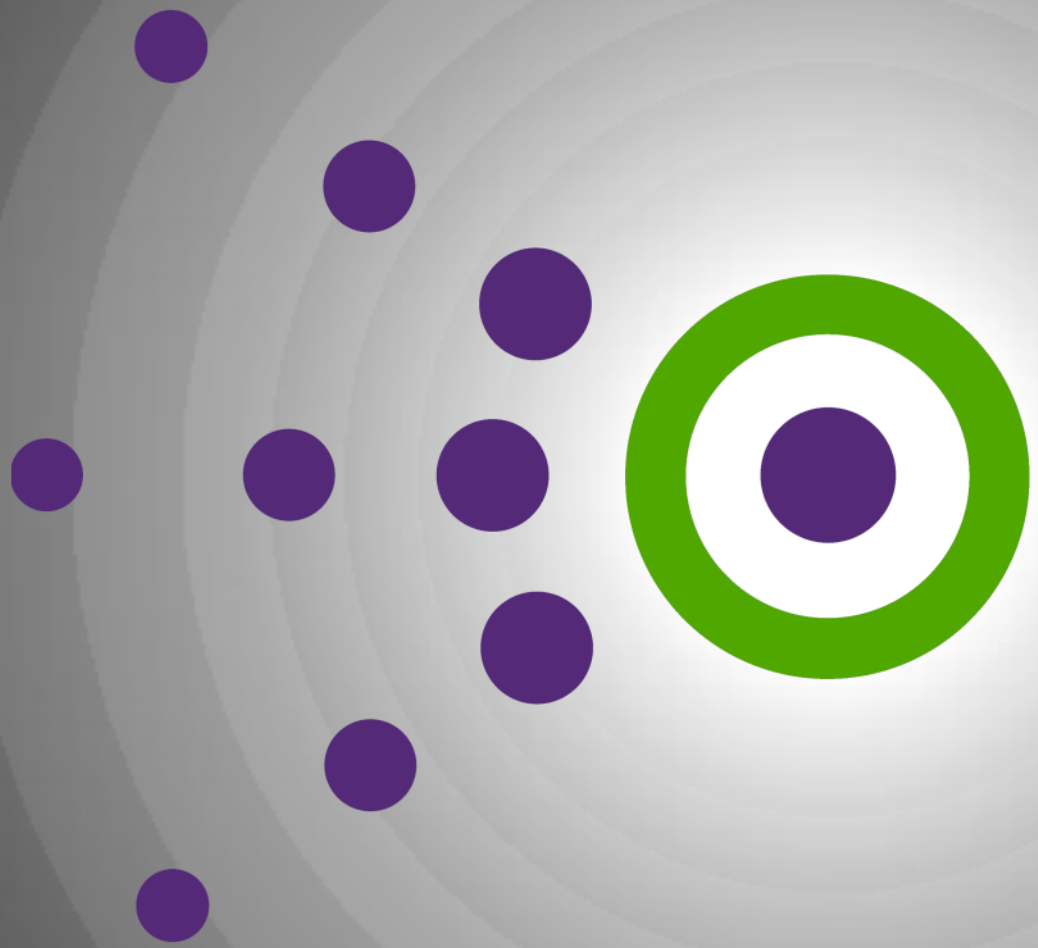
Attachment 1



Common Education Data Standards

ies NATIONAL CENTER FOR EDUCATION STATISTICS

Institute of Education Sciences

http://ceds.ed.gov

Why CEDS? 101

Why CEDS? 101

- What are Common Standards?
- What is CEDS?
- Why do we need it?
- Who’s involved?
- What does it provide?

Common Standards

What are we talking about?

CEDS

A language is a **standard** form of **communication**.

Humans speak **many different languages**.

But, there are **certain things** we **all** need to **understand** and **communicate**.

For these, we need a **common language**.

FOR EXAMPLE: Sign symbols

Imagine…

You arrive at an **airport** in a **foreign city** where an **unfamiliar language** is spoken.

How do you **find your way**?

Universal travel sign symbols.
Developed in late 1970s to aid wayfinding.

Common **Education** **Data** Standards

What are we talking about?

CEDS

Data standard: an agreed upon set of data names, definitions, options & technical specs

Education institutions across **P-20** use **many different data standards**.

But, there are **certain data** we **all** need to **understand**, **compare** & **exchange**.

For these, we need a **common education data standard**.

FOR EXAMPLE: Demographic data

Imagine...

Your **State PreK Program** has a child also enrolled in **Child Care** that uses a **different education data standard**.

Here's a child:

Matthe
SmithIII
Race = Guamanian
Gender = M

Hmmm…
Did you mean:

Matthew ?
Smith ?
Suffix = III ?
Race = NHOPI ?
Sex = M ?

FOR EXAMPLE: Demographic data

Imagine...

A **student** from a **high school in State A** enrolls in a **university in State B** that uses a **different education data standard**.

Here's a
new student:

Jonatha
TsumuraII
Race = Japanese
Gender = M

Hmmm…
Did you mean:

Jonathan ?
Tsumura ?
Suffix = II ?
Race = Asian ?
Sex = M ?

CEDS

The POINT is:

The P-20 community needs a

COMMON VOCABULARY

for education data.

What is CEDS?

What is CEDS?

- A national collaborative effort to develop **voluntary**, **common** data standards for a key set of education data elements
- A **vocabulary** including standard definitions, option sets & technical specifications to streamline sharing and comparing

Voluntary Common Vocabulary

Why do we need CEDS?

1. **Accurate**, **timely**, and **consistent data** to inform decisionmaking

2. **Share & compare high quality data** within & across **P-20** sectors

CEDS is Not:

- Required
- All or nothing
- A data collection
- An implementation
- Solely an ED undertaking
- A federal unit record system

CEDS: Who's involved?

CEDS v2 Stakeholders (1 of 2)

- **State Agencies**
  - State Education Agencies
  - State Higher Education Agencies
  - Social Services Agencies
- **Local Education Agencies**
  - K12
  - Head Start
  - Social Services
- **Institutions of Higher Education**
  - Public
  - Private
  - Community Colleges

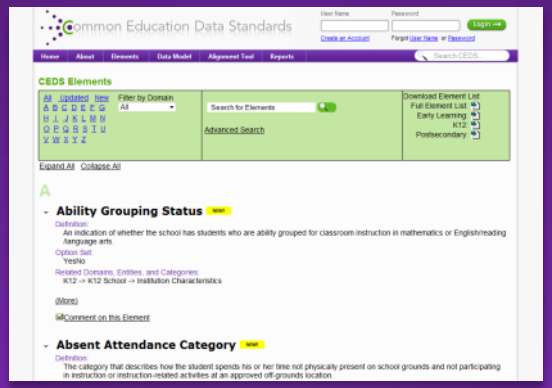
CEDS v2 Stakeholders (2 of 2)

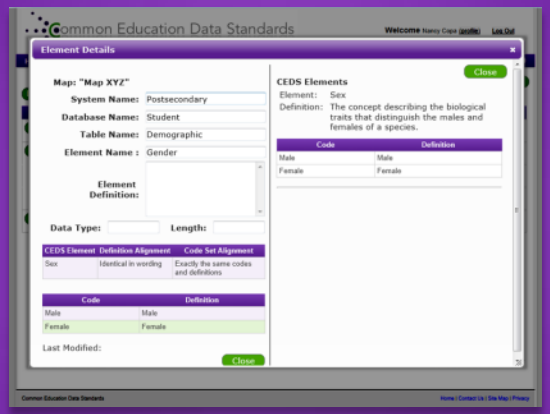
- **U.S. Department of Education**
  - NCES (SLDS, IPEDS)
  - ED*Facts*
  - Office of Educ. Technology
  - Financial Student Aid
  - Office of the Undersecretary
  - Special Education
- **U.S. Health and Human Services**
- **U.S. Department of Labor**
- **Interoperability Standard Organizations**
- **Education Associations**
- **Foundations**

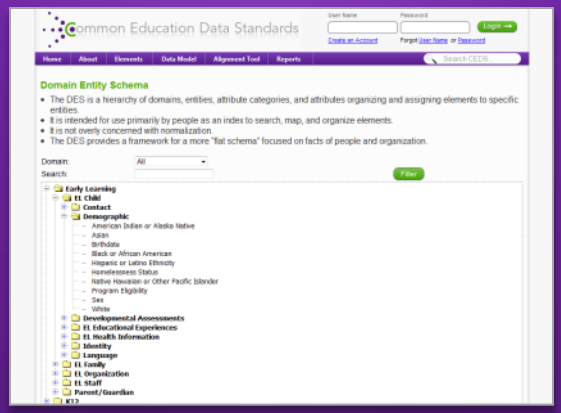
What does CEDS provide?

CEDS provides:

- A Robust & Expanding **Common, Voluntary Vocabulary** drawn from existing sources







- Powerful Stakeholder **Tools & Models**
  - Data Alignment Tool
  - Logical Data Model

CEDS Elements

All Updated New

A B C D E F G
H I J K L M N
O P Q R S T U
V W X Y Z

Filter by Domain
All

Search for Elements

Advanced Search

Download Element List
Full Element List:
Early Learning:
K12:
Postsecondary:

Expand All Collapse All

A

Ability Grouping Status NEW!

Definition:
An indication of whether the school has students who are ability grouped for classroom instruction in mathematics or English/reading /language arts.

Option Set:
YesNo

Related Domains, Entities, and Categories:
K12 -> K12 School -> Institution Characteristics

(More)

Comment on this Element

Absent Attendance Category NEW!

Definition:
The category that describes how the student spends his or her time not physically present on school grounds and not participating in instruction or instruction-related activities at an approved off-grounds location.

Standard Information: The Basics

Element

Definition

Option set

Domain

Entity

Related Use Cases

Element Details

Hispanic or Latino Ethnicity UPDATED!

Definition

An indication that the person tra
Cuba, Central and South Americ

Option Set

Description	Option
Yes	Yes
No	No
Not selected	NotSelected

Related Entities and Categories

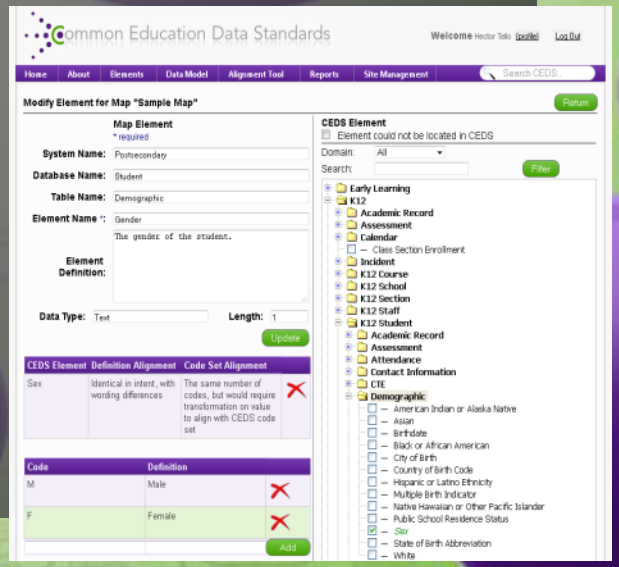
Early Learning -> EL Child -> De
K12 -> K12 Staff -> Demograph
K12 -> K12 Student -> Demogr
Postsecondary -> PS Student ->

Related Use Cases

Early Learning -> Program Entry
Postsecondary Education -> Tra
Postsecondary Education -> IPE
Postsecondary Education -> Co

CEDS Logical Data Model

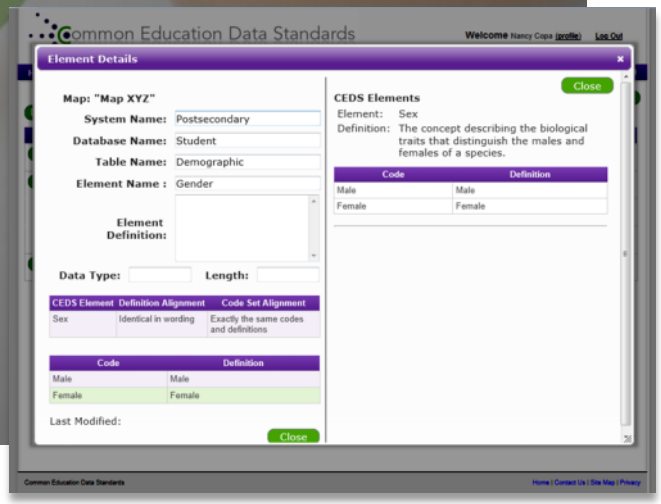
- Provides a **high-level framework** for translating standards into physical models
- **System-agnostic** representation
- **2 distinct views**:
  - Domain Entity Schema
  - Normalized Data Schema



CEDS Alignment Tool

Web-based tool that allows users to:

- Import or input **their data dictionaries**
- **Align** their data to CEDS
- **Compare** themselves **with others**
- **Analyze** their data in relation to various other CEDS-aligned efforts



CEDS Use Case Generator Tool

Builds on the CEDS Data Alignment Tool and allows stakeholders to:

- Generate **specific** and **relevant** maps to a **growing pool** of CEDS aligned use cases

RECAP

1. **We need standards**
2. **CEDS** is **here**
3. It's a **Group Effort**
4. It's for **P-20**
5. It provides **Elements**
6. It's got a **Data Model**
7. It's got **Powerful Tools**

For more information, visit:

http://ceds.ed.gov

Why do we need Common Education Data Standards?
While education institutions across the P-20 (early learning through postsecondary) environment use many different conventions for capturing data and meeting information needs, there are certain data that must be easily understood, compared, and shared by all. For these, we need a shared vocabulary for education data—that is, we need common education data standards. The Common Education Data Standards (CEDS) project is a national, collaborative effort to develop voluntary data standards for a key set of education data elements to streamline the exchange, comparison, and understanding of data within and across P-20 institutions and sectors.

The highly mobile nature of our student populations requires that we be able to share high quality data in an efficient manner. When a student transfers from one program, institution, district, or state to another, or advances from one sector of the education system to the next, information must accompany him or her to ensure continuity and appropriateness of services provided (e.g., class placement, program participation). Without common standards for communicating this information, transfer of data may be slow, laborious, and fraught with errors, and can increase staff burden (e.g., time spent deciphering data) and potentially compromise student outcomes.

Having a common vocabulary for the full continuum of education is also important because, depending on the context, the same word can have different meanings. For example, in K12 education, "retention" refers to a student being held back a grade level (and viewed negatively). In postsecondary, however, "retention" is a positive occurrence indicating that a student has returned to advance his or her education. The collaboration of representatives from across all levels and sectors of the education system to develop a single, agreed upon standard ensures that adopters of that standard can be confident that their data will be accurately interpreted by recipients, and that they, in turn, will understand data received from others.

What is an Education Data Standard?
An education data standard is a set of commonly agreed upon names, definitions, option sets, and technical specifications for a given selection of data elements. For example, in CEDS, the element ADDRESS TYPE for ORGANIZATION is defined as “The type of address listed for an organization” and can be described as one of a finite set of options, including Mailing, Physical, and Shipping. When this data element is used as part of a transcript, both the provider and recipient(s) of the document can understand the intended meaning, so long as both parties adhere to the standard.

How was CEDS developed?
NCES heard strong interest in, and sometimes concern about, data standards directly from state education agencies (SEAs) and other governmental actors involved in creating statewide longitudinal data systems (SLDSs), national organizations, and other Federal offices. To develop voluntary common standards and to support SEAs in improving data quality, NCES established a technical working group under the Director’s Expert Guidance and Assistance clause in the Education Sciences Reform Act (ESRA) for the Institute of Education Sciences (IES) in the Fall of 2009. It was constituted under the authority of the Director of IES to convene (ESRA Sec. 114(g)). The current members of this technical working group, now called the CEDS Stakeholder Group, include representatives from across the P-20 field.

Why is another standard being developed from scratch?
The CEDS are not being developed from scratch. The Stakeholder Group first identifies an initial list of elements to be included and then reviews the existing definitions from existing efforts including the NCES Handbooks; Schools Interoperability Framework (SIF); Postsecondary Electronic Standards Council (PESC); Education Data Exchange Network (EDEN); the Integrated Postsecondary Education Data System (IPEDS); National Forum on Education Statistics; Head Start; other federal and national data sources; as well as best practices from states, districts, and institutions of higher education. Those definitions and option sets, or an adapted version of them, were used for most of the CEDS data elements. Only when an element was not already included in any of those sources was a new definition and/or option set developed.

In all cases, definitions are based on element definitions and option sets currently used by SEAs, districts, institutions of higher education, and other educational institutions. The Stakeholder Group considered state laws that impacted data systems and applicable local, state, and federal regulations regarding the collection, use, and reporting of data (e.g., local vs. state, K12 vs. higher education). CEDS reflects an understanding and acceptance of what can be viewed as "common" about these elements from the broad perspectives of the Stakeholder Group members. Additional input was gathered during a review process during which other education stakeholders such as associations, vendors, institutions of higher education, other state and local education agency representatives, and the interested public provided feedback on the data elements.

Is CEDS intended to serve as the foundation for a national student unit record data system?
No. The CEDS is not a data collection at all. It is a list of data elements, with definitions, option sets, and an XML schema, to be used in the development of a common vocabulary for a core subset of data elements that exist in multiple data systems. The U.S. Department of Education is prohibited from creating a national student unit record data system, but it is does have the authority through the Education Science Reform Act of 2002 to determine voluntary standards and guidelines to assist SEAs in developing statewide longitudinal data systems (SLDSs). All states are in the process of developing SLDSs and, given the increasing demands for high quality, consistent data that follow students across their education careers, Common Education Data Standards for a core subset of elements are needed.

Why is there an emphasis on P-20 data elements in CEDS?
Educators and policymakers need accurate, timely, and consistent information about students and schools to inform decision making—from planning effective learning experiences, to improving schools, reducing costs, and allocating resources—and states need to streamline federal data reporting. When common education data standards are in place, education stakeholders, from early childhood educators through postsecondary administrators, legislators, and researchers, can more efficiently work together toward ensuring student success, using consistent and comparable data throughout all education levels and sectors.

While numerous data standards have been used in the field for decades, there has not emerged a universal language that can serve basic information needs across all sites, levels, and sectors throughout the P-20 environment. By identifying, compiling, and building consensus around the basic, commonly used elements across P-20, CEDS meets this critical need.

What is the CEDS Consortium?

The CEDS Consortium is a coalition of education stakeholders that is enthusiastically supporting these efforts. The Consortium believes, not only that common data standards can support the SLDSs, but also that their value can extend well beyond to assist the education community in hundreds of other ways. Led by the Council of Chief State School Officers (CCSSO) and the State Higher Education Executive Officers (SHEEO), the Consortium is supporting the CEDS Initiative with the mission of (1) communicating and advocating about CEDS to the K12 and postsecondary environments and (2) promoting adoption and implementation of CEDS within and across those education environments.

What is the CEDS Logical Data Model?

The CEDS Logical Data Model provides representations of the CEDS data elements in the context of entities and relationships between elements. CEDS provides two schemas:

1. **Domain Entity Schema (DES**): a hierarchy of domains, entities, attribute categories, and attributes organizing and assigning elements to specific entities. It is used primarily by people as an index to search, map, and organize elements. This schema is provided as a downloadable spreadsheet and it is the schema used for navigating the CEDS Alignment Tool.
2. **Normalized Data Schema (NDS):** a logical data model normalized and organized around the key concepts of organization, person, and role. The model shows cardinality of the relationships (e.g. one-to-one, one-to-many, or many-to-many). The model will be expressed as both an entity relationship diagram (ERD) and XML Schemas.

The CEDS Logical Model provides a framework to inform physical implementation of P-20 data integration based on the standards. However, it is not a physical implementation of a database or data system. The structure of the NDS provides a standard framework for integration of P-20 data systems through a well-normalized structure such as might be found in an operational data store. The structure of the NDS is not optimized for applications such as analytics and reporting, and it does not address some important aspects of physical implementations such as the production aspects of log and change management, performance optimization, database indexing, data movement protocols, etc.

What is the Alignment Tool?

The CEDS Alignment Tool (http://ceds.ed.gov/alignmenttool) is a Web-based solution that allows stakeholders to:

- Import or input their organizations' data dictionaries
- Compare (or "map") their data dictionaries (element names, definitions, and options sets) to CEDS
- Compare their data dictionaries with other participating organizations

This process facilitates alignment both with CEDS and across systems, paving the way for easier sharing and comparison of data. For example, if a state education agency wants to share data with the Department of Labor in its state, these organizations can import their data dictionaries into the CEDS Alignment Tool, map them to CEDS, and make these "maps" viewable to the other state agency. This powerful tool shows the users where the differences exist between the standards, and what standards their organizations have in common.

How Can I Use the Alignment Tool?
The Alignment Tool makes comparisons across data systems or organizations possible. By aligning each data dictionary to CEDS Version 2, data systems have a common vocabulary on which to compare. The Alignment Tool can be used for many purposes. Here are three example scenarios:

- A state is building a consolidated Early Learning data system. The state's various health and education agencies collect data so the state has an Early Childhood Health data system, a Head Start data system, and a Pre-Kindergarten data system. Prior to developing the single, consolidated data system, the state wants to determine what elements the three data systems have in common and where there are discrepancies. The state can then upload each data system's data dictionary into separate maps. Once all three are aligned to CEDS, the state can compare the three systems to see what commonalities exist.
- A school district in State A is a feeder school for a postsecondary institution in State B. Since State A and State B don't share the same data system, it is important for both the school district and the postsecondary institution to communicate about data collected on students to ensure a seamless transition. When both the school district and the postsecondary institution load their data dictionaries in the Alignment Tool and align them to the CEDS elements, they can view each other's maps and determine commonalities.
- State C wants to begin to collect better information about participation in Food Service Programs. Because others have aligned their maps to the Alignment Tool, State C can compare all similar organizations to see how they have defined this element. State C can also see how CEDS has defined this element, and then use this information to start the internal dialog to determine how it will define the element.

What is the relationship between CEDS and the NCES Handbooks and the National Education Data Model (NEDM)?
The NCES Handbooks serve as a primary source for CEDS definitions. The online Handbook includes elements in seven domains: school, LEA, Intermediate Educational Unit (IEU), SEA, student, staff, and class. While the Handbooks serve as guides that districts and states can adopt as is, adapt as needed, or choose not to reference, the limited set of CEDS elements are designed to be adopted widely in hopes of encouraging a common vocabulary for a small, but critical, set of elements. As NCES conducts each annual review and update of the Handbooks, it will review the CEDS elements and align with them where possible. CEDS will be aligned with the Handbooks as closely as possible as well.

CEDS provides a common vocabulary (definition, option sets, and an XML schema) for a core subset of education variables. While the focus of CEDS is to establish a single common definition for each of the targeted elements, the National Education Data Model (NEDM) provides entities and attributes from multiple sources, including the NCES Handbooks, and represents them in a conceptual data model (i.e., depicting the relationships that exist across the elements). As CEDS definitions are finalized, NEDM will be updated to include them.

What is the relationship between CEDS and SIF?
The SIF Association is a non-profit membership organization whose members include over 3,200 school districts, state education agencies, software vendors, and other organizations active in primary and

secondary (K-12) markets. These organizations have come together to create a set of rules and definitions which enable software programs from different companies to share information. This set of platform-independent, vendor-neutral rules and definitions is called the SIF Implementation Specification. The SIF Specification makes it possible for programs within a school or district to share data without any additional programming and without requiring each vendor to learn and support the intricacies of other vendors' applications. The SIF Association Staff and members have been engaged since the inception of the Common Education Data Standards (CEDS). Differences that remain between the SIF Implementation Specification and CEDS will be considered in future versions of SIF Implementation Specification by the SIF Association membership.

What is the relationship between CEDS and PESC?

The Postsecondary Electronic Standards Council is a community-based, umbrella association of colleges and universities; college and university systems; professional and commercial organizations; data, software, and service providers; non-profit organizations and associations; and state and federal government agencies. Through open and transparent community participation, PESC enables cost-effective connectivity between data systems to accelerate performance and service, simplify data access and research, and improve data quality throughout the higher education lifecycle. PESC envisions national and international interoperability— a trustworthy, inter-connected environment built by and between communities of interest in which data flows seamlessly from one system to another and throughout the entire system when and where needed without compatibility barriers and in a safe, secure, reliable, and efficient manner.

Definitions and code sets for the items included in CEDS were synchronized with PESC. PESC and CEDS staff are committed to working closely throughout our respective revision cycles and coordinating all updates to both the PESC specifications and CEDS elements. If for any reason agreement cannot be reached on item definitions, the differences and reasons will be documented.

How is CEDS different from the Common Core State Standards?

The Common Education Data Standards (CEDS) is a set of commonly agreed upon names, definitions, option sets, and technical specifications for a given selection of data elements. CEDS focuses on the meaning of data stored in longitudinal data systems, and is being developed by a technical working group facilitated by NCES.

The Common Core State Standards define the knowledge and skills students should have within their K12 education careers so that they will graduate from high school able to succeed in entry-level, credit-bearing academic college courses and in workforce training programs. The Core standards are focused on providing clear goals for student learning. The Common Core State Standards is a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO).

CEDS will support systemic education reform efforts by making it possible for states to collect the data they need to fully understand their progress on successfully adopting the Common Core State Standards or any other high standards. CEDS are a commonly defined subset of key K12 data elements and key K12-to-postsecondary transition data elements. CEDS focuses on the meaning of data stored in student information systems and are being developed by the CEDS Stakeholder Group.